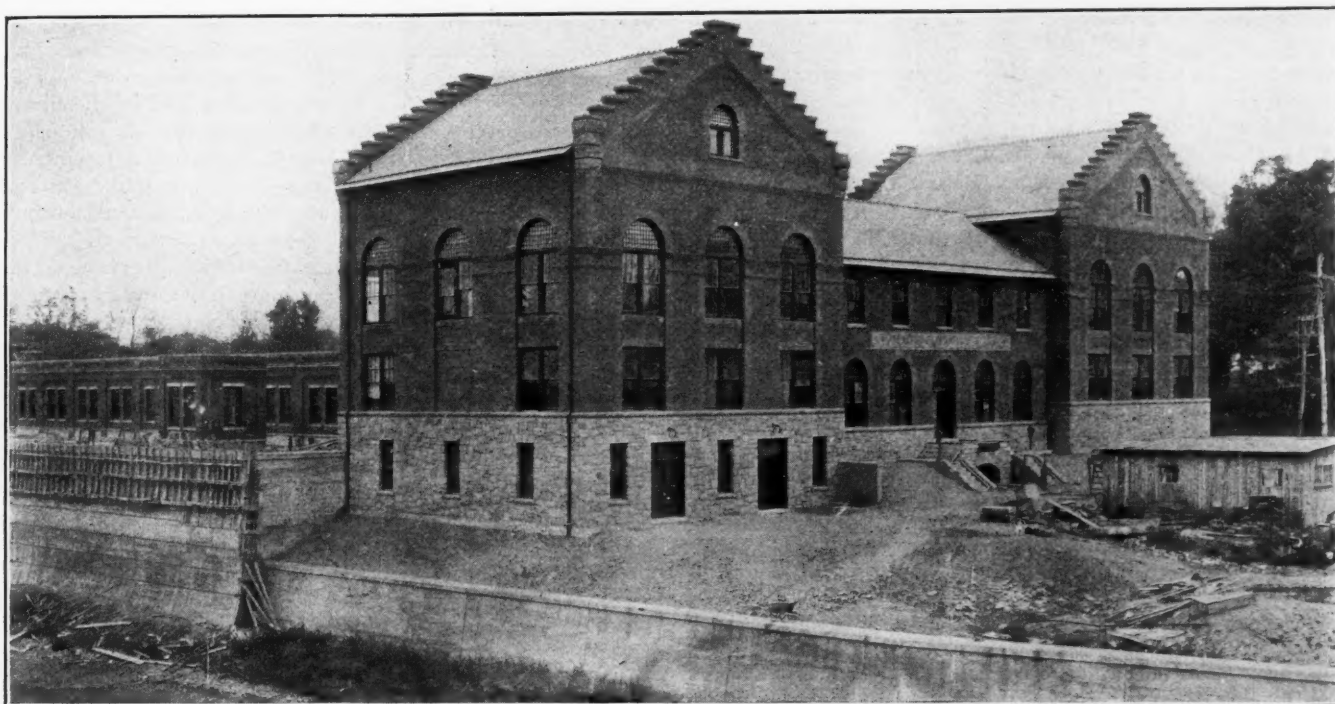


# Municipal Journal

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GENERAL VIEW OF FILTER BUILDINGS, FROM RIVER.

## WATER PURIFICATION AT TRENTON

**Rapid Filters of Thirty Million Gallons Capacity Located at River—Low Lift Pumps and Filter Machinery Operated by Electricity—Combined Wash Water and Air Tank.**

For fifteen years the improvement of the public water supply at Trenton, N. J., which was drawn from the Delaware River without treatment, has been a question that has received much consideration. During this time there has been under consideration but two sources of supply, namely, ground water from wells and water from the Delaware River. The former received a most careful study but its adoption was out of the question, according to reports from the engineers, on account of both its quantity and its quality, and it was decided to use river water and to purify it. Johnson and Fuller, consulting engineers, of New York City, who were retained to design a plant, in 1912 presented plans for rapid sand filters with a capacity of 30,000,000 gallons per day. This plant is now practically completed.

Many factors influenced the engineers in their decision against the use of ground water. A large part of the city overlies a deep crystalline rock and borings for water through this stratum have resulted in failure. Therefore it seemed that, in order to secure a sufficient supply, it would be necessary to go far from the city and the expense of this would be heavy. Moreover, the most favorable location from which the supply could be secured is

overlaid with a yellowish sand and gravel formation, the color being due to the presence of iron. Water from this source would be hard, would contain iron and the cost would be greater than that for filtered water from the Delaware River.

On the other hand, the water of the Delaware is soft and, aside from the mud it contains at times, is considered an excellent supply from a physical and chemical point of view. It does not possess a marked color and the periods of high turbidity are short. The supply is plentiful.

For several years past, the typhoid death rate in Trenton has shown the need of a modern filtration plant. The average death rate from that cause for the ten years ending 1900 was 28, while for the years 1908, 1909 and 1910 it was 54, 36 and 53, respectively. In 1911 the use of hypochlorite was adopted and was effective in reducing the typhoid death rate, but the unfiltered water is very unsatisfactory, especially in appearance.

Various advantages in operation and maintenance led to the location of the plant on the river bank just above the pumping station, in preference to placing it near the reservoir. Cost of construction, ease of supervision, sav-

ing in repairs and economy of operation were among the reasons for selecting the river bank location.

With a population of 100,000, Trenton in 1911 was using over 20,000,000 gallons of water per day, the maximum for any one day reaching the high mark of 31,400,000 gallons. This was exceptional, and it was thought that the pumping capacity could be kept within this limit for many years by pumping at a uniform rate, by taking advantage of the storage offered the reservoir and by the reduction of water waste. The works were therefore designed for a capacity of 30,000,000 gallons per day and arranged for an extension to 45 million gallons per day when required.

The plant, which is located at the foot of Calhoun street, just above the present pumping works, consists of two covered sedimentation basins, sixteen filters, a clear water basin, a low-lift pumping plant, a head house, conduits and complete filter equipment.

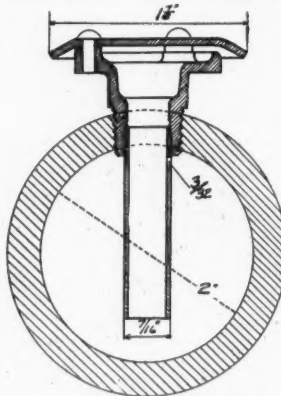
The low-lift pumps, which will operate against a total head of about twenty-five feet, as a maximum, consist of two vertical centrifugal pumps, each having a capacity of 20,000,000 gallons per day. These are driven by direct-current motors, which are automatically controlled by devices actuated through floats by slight variations in the water level in the sedimentation tanks. Two 200-k.w. steam turbo-generators furnish the current, and these are amply large for furnishing all the power required for low-lift pumping, for operating the filter machinery and for lighting the pumping and filter plants. All the machinery at the filter plant is motor driven.

Remodelling the arrangement of the old pump well and improving the arrangement of the screens was necessary. The well is now divided into two parts, one to supply raw water to the low-lift pump, the other to receive filtered water for the present main pumps. The water is conducted to and from the filter plant in two 60-inch mains, each 320 feet long.

The two sedimentation basins are of equal size, each being 210 feet long, 62 feet wide and 19 feet 6 inches deep. They hold about 1,900,000 gallons each, this capacity be-

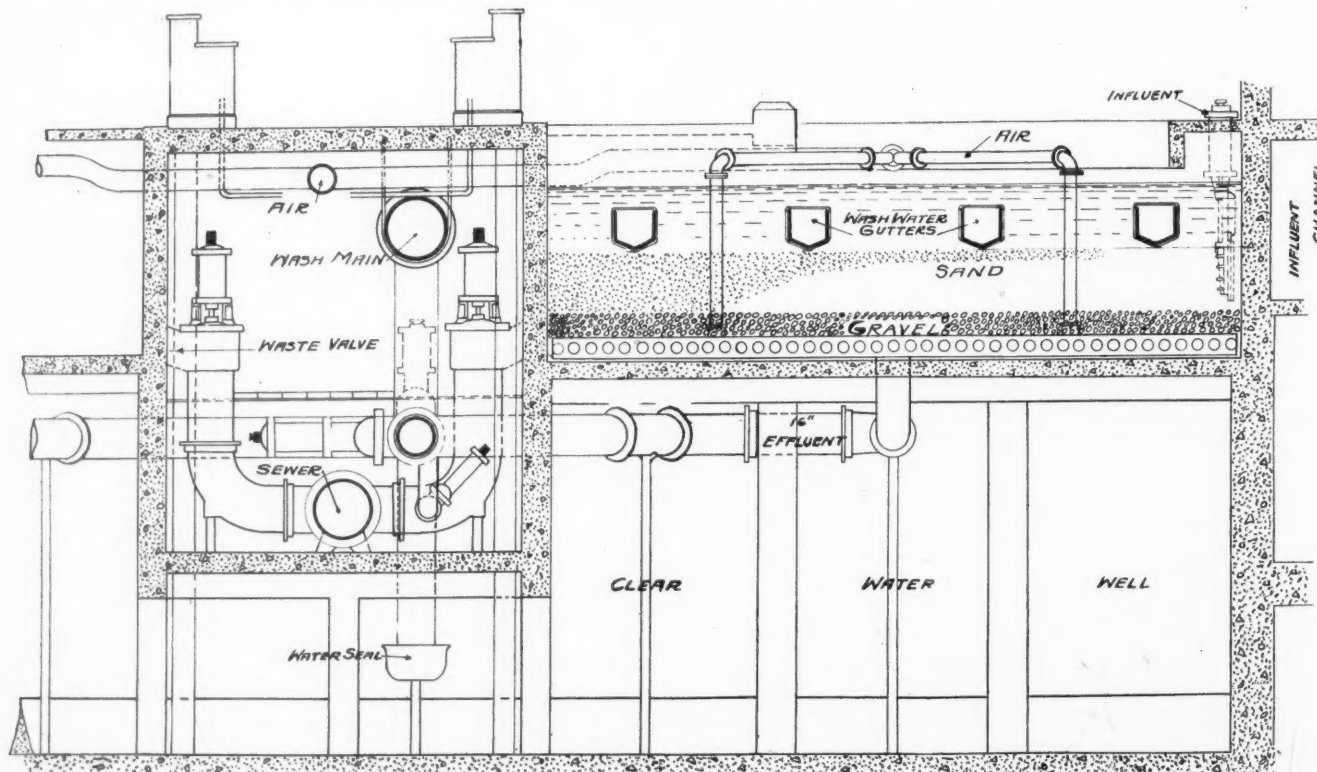
ing equivalent, with both basins in operation and the filters running at full capacity, to a retention period of nearly three hours. The basins are so arranged that either or both can be used.

Arranged in two rows on either side of the pipe gallery and between the two sedimentation basins are the sixteen filters. These are rectangular in shape, 24 feet by 30 feet 6 inches, and each has a filtering area of 652 square feet, giving a capacity of 1,875,000 gallons daily when filtering at the rate of two gallons per square foot per minute. The filter bed consists of thirty inches of sand supported on ten inches of graded gravel. The sand is specified to have an effective size of from 0.35 mm. to 0.44 mm. and a uniformity coefficient of about 1.65.



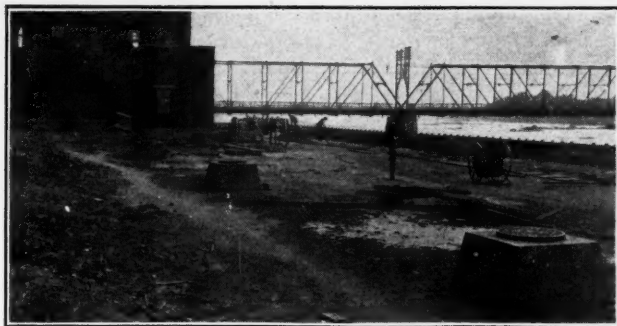
SECTION OF STRAINER.

which the wash water issues from an annular space of such width as to permit only a very low velocity. As it leaves the strainer, the wash water is deflected downward to the floor into the filter, the purpose of the design being to admit wash water into the filter bed at such low velocity that there will be no tendency to disturb the gravel and also to permit rust scale or other particles, that may enter the strainer, to pass through it. The inlet tube provides all the restriction of flow necessary to insure uniform distribution of wash water.



CROSS SECTION OF PIPE GALLERY AND BEDS ON ONE SIDE OF SAME.





TOP OF SEDIMENTATION BASIN, SHOWING MANHOLES.

Between the two rows of filters and extending the length of the plant is the pipe gallery, 12 ft. 4 in. wide by 15 feet deep. It contains the wash water supply pipe, sewer, pressure pipe, air main, controllers and valves, and is accessible throughout. A platform covers the gallery and on this platform, opposite each filter, are the operating tables and gauges. All valves are operated by hydraulic pressure and controlled from the tables.

Underneath the filters and extending across one end of the southerly sedimentation chamber, is the clear water basin. The available depth of water in this is about 10 feet, corresponding to a capacity of about 1,200,000 gallons, which is sufficient, without inflow, to supply water to the main pumps for almost one hour at a rate of pumpage of 30,000,000 gallons daily.

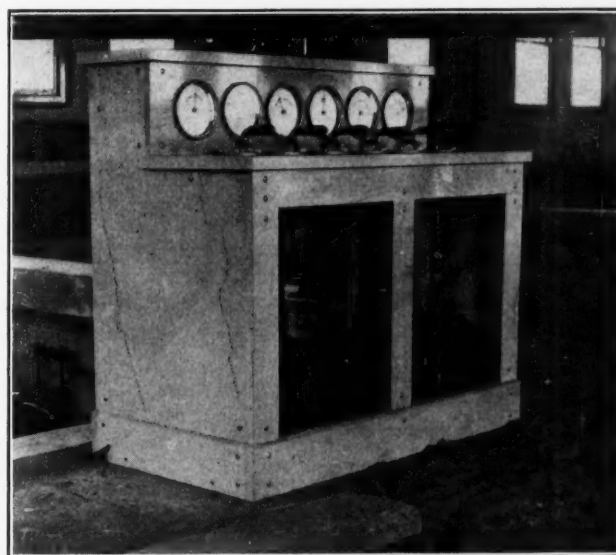
In one wing of the head house is located a steel wash water and air tank combined. This tank, which telescopes in a manner similar to that of a gas holder, is 40 feet in diameter and provides water under a head of 24 feet and air under a pressure of 4 pounds per square inch for washing the filters. To produce the required air pressure, the tank is loaded with 300 tons of concrete. The tank provides uniform pressure of air and approximately uniform pressure of water without the necessity of installing a large wash water pump and blower. Because of the storage provided by this tank, the capacities necessary for the wash water pump and blower are only one-tenth of that which would be necessary in case of direct delivery to the filter beds. The tank will supply sufficient water and air, without replenishing, for washing two filters in immediate succession, but it is so arranged in connection with the wash pump and blower that it automatically begins to receive air and water as soon as the wash begins. A connection to the city force main is also provided, so that a supply of wash water is assured in case it is necessary to put the pump out of service. In washing the filters, air and water are applied alternately, the water at the rate equivalent to about 19 inches vertical rise per minute, which is twelve gallons per square foot per minute. The dirty wash water is collected at the top of each filter unit in four cast-iron gutters spaced 6 feet apart.

In the purification process, river water is pumped through a 60-inch cast-iron main to a point between the sedimentation basins, where it divides and may be passed to either basin or to both, entering over a weir extending along the end of the basin at the flow line. The coagulant—sulphate of alumina—is applied through a grid of perforated pipe in a well at the entrance to each sedimentation basin. The coagulated water enters the basins over the weirs and is then forced down nearly to the bottom by a baffle, flowing thence through the basins and over similar weirs at the outlet end into channels which lead to and along the back ends of the filters. From these channels the water is admitted freely to the filters through hydraulically operated sluice gates. It then passes through the filter beds, into a manifold strainer system and thence through registering rate controllers into the clear water

basin below. At the outlet of the clear water basin the filtered water may receive, through a Wallace and Tiernan type solution feeder, a small quantity of chlorine gas in solution. The original design provided for the use of hypochlorite of lime as a germicide, but during construction it was decided to change to chlorine gas.

During periods of excessive floods when, as records show, the alkalinity of the water will be insufficient, a solution of soda ash will be added to the water at a point in the 60-inch main, 80 feet ahead of the point of application of the alum, in order to insure complete decomposition of the coagulant. This treatment will be required at infrequent intervals and then only for short times.

The chemical handling apparatus for coagulant and soda ash consists in each case of a pair of solution tanks, mixing devices and accurate adjustable orifices. Piping for sulphate of alumina solution is lead or hard rubber with valves of acid-resisting bronze. The piping for the soda ash is wrought iron with brass valves.



FILTER OPERATING STAND.

The head house, which, like the filter house, is built of red brick, is located across the ends of the sedimentation basins and over two of the filters and encloses in one wing the wash water and air tank. The other wing contains on four floors the office and laboratory equipment for handling and applying chemicals, wash water pumps and blowers and space for the storage of the chemicals.

The general contractor for the work is the J. S. Rogers Company, of Moorestown, N. J. The filter equipment is being installed by the Roberts Filter Manufacturing Company, of Darby, Philadelphia, Pa., and the low-lift pumping equipment by the De Laval Steam Turbine Company, of Trenton, N. J. Fred W. Daggett is resident engineer for Johnson & Fuller, consulting engineers.

#### FREE PORCH LIGHTS IN LONGMONT.

In Longmont, Colorado, the municipal lighting plant grants each customer free current for one 40-watt lamp on each porch directly facing a street. There are about 550 of these free porch lights in the city and they are regarded as valuable additions to the street lighting in the residence district.

In the efforts to develop the offpeak load, very low prices are made for cooking rates. From April to October, inclusive, three cents per k.w. hour with a minimum of \$1.00 per month, or two cents per k.w. hour with a minimum of \$2.50 per month, is charged. From November to March a rate of ten cents per k.w. hour is charged, however.

## KAMLOOPS' STEAM TURBINE POWER PLANT

Municipal Auxiliary Plant of Twenty-two Hundred Horsepower in British Columbia—Apparatus Installed—Water Works Pumping Plant.

By H. W. BEECHER, M. E.

The city of Kamloops, B. C., has recently completed a municipal power plant which, while it is smaller than some other Canadian municipal plants, differs in some respects from the ordinary steam turbine plant because of a combination of conditions which controlled the design.

The city, which is located at the junction of the North Thompson and South Thompson rivers, and is on the Canadian Pacific Railway, has been growing rapidly and promises to continue to do so, and this has required provision for water supply and street lighting plants of much greater capacity than were originally constructed. The water supply is drawn from Thompson river and pumped to reservoirs on neighboring hills. Several years ago it seemed to city officials that this offered an excellent opportunity for combining pumping and electric power plants, the former being used to fill in the times between peak loads and thus keep the load more uniform. H. K. Dutcher, of Vancouver, was employed to report upon the proposition, and located a power site on the Barriere river about forty miles north of Kamloops, where an ultimate development of 16,000 h.-p. was possible. The municipality voted \$475,000 for the project and proceeded to carry it out. The present plans call for only 2,200 h.-p. installation, but provision is made for the ultimate development of the entire power available.

The plant on the Barriere river now nearing completion will consist of two 1,100 h.-p. Victor-Francis turbines made by the Platt Iron Works Company, of Dayton, Ohio, and supplied through Charles C. Moore & Co., engineers, of Seattle; and two Westinghouse water wheel type generators direct connected to the turbines. The turbines will operate at 720 r. p. m., will be of the single runner scroll case Francis type and will be provided with outside gate mechanism and direct acting Lombard governor.

To provide for accidents to the power plant, and especially on account of the long transmission line, it was considered necessary to install an auxiliary steam plant in the city. As the demand for increased power was immediate, and the steam plant could be constructed more quickly than the hydraulic works, it was decided to build the steam plant as quickly as possible so that it could be used while waiting for the completion of the hydro-electric system. The engineers prepared plans for a combination steam plant, sub-station and pumping plant, and this has recently been completed and is the most interesting feature of the municipal installation.

On account of the shifting bed of the Thompson river, it was considered advisable to construct the main power house some distance from the river, where suitable foundations could be secured, and place an auxiliary pump house at the river's edge. The plan provided also for the future construction of filters to receive the discharge from the auxiliary pumps, from which the effluent could flow by gravity to the pump well of the main pumps.

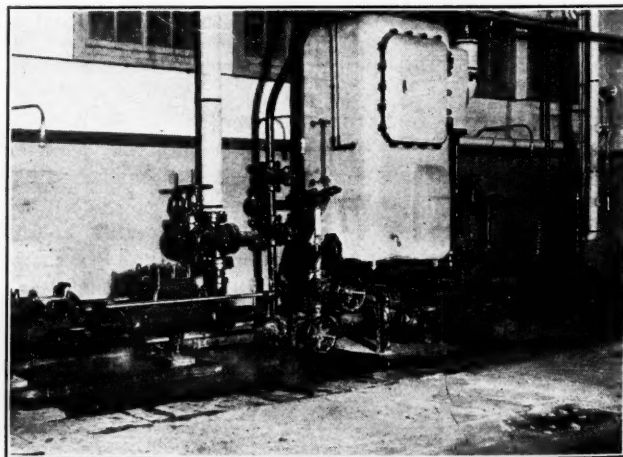
The auxiliary pump house contains two vertical centrifugal pumps operated by vertical motors placed above the highest known water level. Water is brought to the pumps through long intake pipes which terminate in a screened inlet located in the middle of the river. The inlet pipes terminate at the pump house in gate valves, hand-operated. After leaving these pipes the water passes through a double system of screens into the suction cham-

ber. The pumps are operated from the main switchboard, one by a standard hand-operated starter and the other by an automatic patent starting device controlled by a float switch which maintains at a given level the water in the suction chamber. By proper regulation of the inlet valves this automatic pump is kept in practically uniform service. The pump house is of concrete heavily reinforced throughout.

### POWER HOUSE AND PLANT.

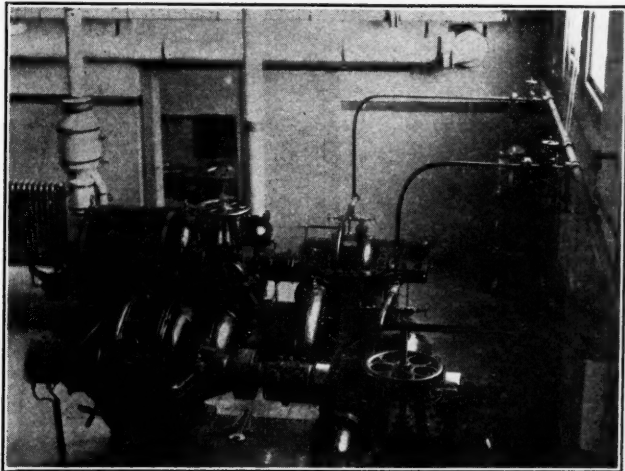
The main building is of reinforced concrete, 90x75 feet ground plan, divided into boiler room, turbine room and high-tension sub-station. In the basement at the extreme west end is located a reservoir from which the pumps take their suction, and here also are located the condenser and condenser auxiliaries. The basement under the turbine room is on the same level as the boiler room floor. The suction well is connected to the auxiliary pumps on the river's bank by about 600 feet of 6-inch mains. The roof over the boiler room is supported by trusses and that over the turbine room and switchboard by deep web I beams. The horn gap structure for the high tension lines allows them to come in through roof cones, well within the confines of the plant.

The boiler room contains four Babcock & Wilcox water tube boilers of 250 h.-p. each. Each boiler contains ten sections of ten 4-inch by 18-foot tubes, mounted under one 54-inch steam and water drum. They are designed to operate at 160 lbs. pressure. The pumps were manufactured in the Renfrew, Scotland, factory of the Babcock & Wilcox Company, and are arranged so that super-heaters can be added later if conditions warrant. Shaking grates for hand firing are used, but the plant can readily be converted to an oil burning plant. Coal is brought direct from the mines in bottom dump cars and dumped from an overhead spur into the coal bunkers just outside the building. From the bunkers it runs by gravity onto the firing floor through chutes in the rear wall of the boiler room, from which point it is fed by hand into the furnaces. Ashes are raked into the boot or hopper of a motor-driven conveyor elevator of the endless chain type, which discharges them on the ground about 40 feet east of the boiler room. The chimney is 89 inches in diameter and 180 feet high above the boiler room floor. It is heavily reinforced with 5/8-inch steel rods and is of the tapering or coniform type. The boiler feed pumps are of the Smith-Vaile outside end packed plunger type, 6x4x6 inches, manufactured by the Platt Iron Works. They receive water from a Stilwell open type heater. This type of heater is advantageous because it permits the settling out in the filter beds in the bottom of the heater of sediment contained in the river water which is used for boiler purposes. In the heater the water drips over a large tray



STILWELL FEED WATER HEATER AND SMITH-VAILE PUMPS.





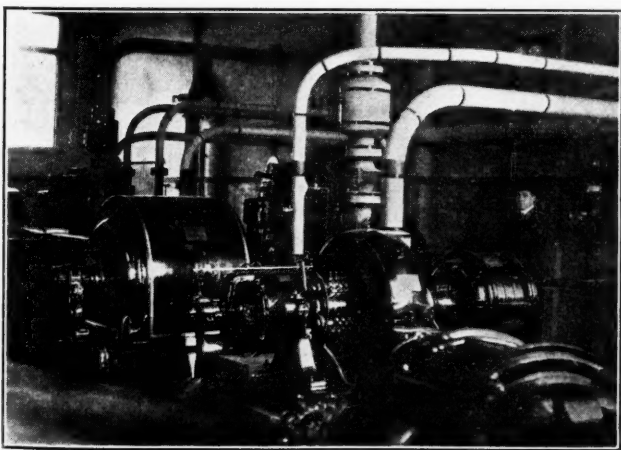
MOTOR DRIVEN AND STEAM TURBINE DRIVEN PUMPS.

surface and then passes into the settling chamber and filter.

The boiler branches leading from the four boilers are each provided with automatic steam stop and check valves at the boiler nozzles and a double wedge gate valve at the header. The header is carried on the boiler room side of the partition between that and the turbine room, branches to the turbines being carried through openings left in the concrete wall. Gate valves are placed on each turbine branch. An auxiliary header is installed within the turbine room, from which branches are carried down to the air pumps and circulating pumps.

The generating equipment consists of two Curtis turbo generators of 600 k. w. capacity built by the General Electric Company. They are wound for 2,200 volts three-phase 60-cycle and operate at 3,600 r. p. m. The governor mechanism operates six inlet valves, giving very close speed regulation. Each unit has an electric speed changing device and over-speed safety trip. The speed of the turbo-generator is thus controlled by the switchboard operator, materially facilitating the paralleling of the machines at the time of bringing the machine onto the line. A 20 k. w. G. E. motor generator exciter running at 1,200 r. p. m. is provided, and for breakdown service and for starting a 15 k. w. Curtis steam turbo-generator exciter.

The turbines exhaust through corrugated copper expansion joints into cylindrical surface Wheeler condensers equipped with steam turbine-driven circulating pumps and Edwards suction valveless air pump. Each condenser contains 1,440 square feet of cooling surface of  $\frac{3}{4}$ -inch brass tubes, secured in brass sheets by ferrules and packed joints. The air pumps are single cylinder, single acting, 7-inch steam cylinder and 16-inch air cylinder with 10-inch stroke.

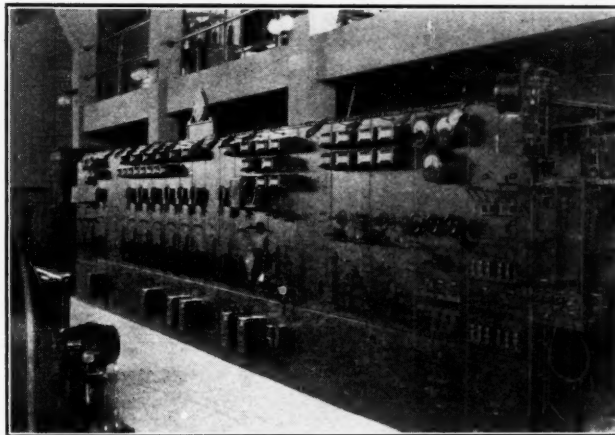


INTERIOR OF TURBINE ROOM.

der with 10-inch stroke. The suction valveless feature makes it possible to use the one pump for handling both air and condensate and maintain a high vacuum. The condensed steam and non-condensable vapors flow continuously by gravity from the condenser to the base of the pump and are removed by a conical piston, which projects the water without shock at high velocity through ports in the sides of the working barrel. The condensing equipment is arranged to produce between 28 and 29 inches of vacuum and was furnished by the Wheeler Condenser and Engineering Company.

#### WATER WORKS EQUIPMENT.

The water works pumping plant consists of two Platt 2-stage centrifugal pumps of the horizontal split casing type, fitted with bronze runners and arranged for motor drive. Their efficiency is 72 per cent. They are driven by two 200 h.-p. 1,760 r. p. m. induction motors manufactured by the Canadian General Electric Company. A third pump, manufactured by the Platt Iron Works, is steam-driven, of the 2-stage type, operated by a 200 h.-p. 2,200 r. p. m. Kerr economy type condensing turbine, exhausting into a Wheeler water works type condenser with Edwards air pump. The condenser has 1-inch tubes and is placed in the suction of the pump so that no circulating pump is necessary. Each of these three pumps has a capacity sufficient to supply the city consumption if operated twenty-four hours a day, but all three can be operated at once, the large reserve capacity being considered advisable to insure adequate fire protection in the business



MAIN SWITCHBOARD.

section. Each pump has a capacity of 1,200 Imperial gallons per minute against a head of 350 feet.

The steam turbine driven pump is found to be very economical, owing to its being operated condensing, the greatest efficiency being obtained with 28 inches vacuum.

Water from these pumps is discharged into a reservoir about a mile away and about 320 feet above the pumps. The main between pump and reservoir serves also as distribution main.

The discharge from the pumps is measured by a Simplex venturi meter located just outside the building wall, the recording and integrating apparatus being placed in the corner of the turbine room.

There is an elaborate switchboard of natural slate containing 22 panels. All high voltage connections on switchboard leads which would prove dangerous to the operators are on a structure placed some distance to the rear of the switchboard and operating by remote control. There is no apparatus on the panels at a potential above 110 volts. The switchboard consists essentially of a station lighting panel box, three generator panels (one blank as yet), 2 station power panels and 2 incoming high tension line panels, the balance being feed panels. At the

extreme end of the board are located the constant current panels for controlling the constant current tubs on the series arc lighting system of the town. The voltage on the system is kept constant by a Tirrell automatic voltage regulator. The high voltage apparatus for the proposed high tension lines from the hydro-electric plant are behind and above the switchboard, partitioned off from the rest of the equipment. It consists essentially of oil switches, aluminum lighting arrester and static transformer, which reduces the voltage from 44,000 to 2,200. Under the transformer are provided suitable oil tanks and water piping to cool the oil in the transformer.

A 10-ton hand-operated travelling crane which runs over the entire turbine and pump room is provided for handling heavy machinery parts. A transfer car permits the transformers to be wheeled out under the crane to facilitate handling their cores for inspection or repair.

This plant, during the short time which it has been operated, has shown a material saving of fuel as compared to the old plant which it supplants. A still greater saving is anticipated when the new hydro-electric plant comes into service and the steam station is held as an auxiliary only.

## SURFACE WATER SUPPLIES OF ILLINOIS\*

Used by Nearly Half the Water Works of the State—  
Run-off Available—Quality of the Water—Intake  
Troubles.

There are in all about 280 public water supplies in the state of Illinois, exclusive of Chicago, which will not here be considered on account of its large size and the influence it would exert on the figures to be presented. The above represents about 77 per cent of the cities and villages having a population over 1,000 and includes an aggregate population of 1,580,000. Seventy-three of the supplies serving 43.2 per cent of the above population are of surface origin. Of this population 72 per cent is served with purified water supplied by 36 different plants.

Generally speaking, smaller communities of the state seek ground water supplies, but in many instances such supplies are not available in adequate quantity or in satisfactory quality. Surface supplies must then be used. A few municipalities have adopted surface supplies because of their easy development and some of these are reverting to the use of ground water supplies.

The state may be roughly divided into two parts by an east and west line through Champaign, north of which ground water supplies are the more numerous and south of which surface water supplies are in the majority. North of the line, 14 per cent are of surface origin and if the smaller surface supplies drawn from Lake Michigan are eliminated, this figure is reduced to 7 per cent. South of the line, 57 per cent are of surface origin.

The explanation of this lies in the fact that throughout the northern half of the state, well waters are generally available in sufficient quantity and satisfactory quality to meet the requirements of a public supply. In that part of the state just south of this line a number of supplies are obtained from shallower drift deposits of glacial or alluvial origin. All wells throughout this region are highly mineralized and are very little used. Some of the drift waters contain sufficient mineral matter to make them unsatisfactory. In the southernmost part of the state, ground water in adequate quantity or satisfactory

quality is seldom available so that in this section the great majority of the supplies are of surface origin. A few notable exceptions to the general rule are found in some deep wells in the limestone rock on the slopes of the Ozark uplift, for example the wells at Anna and Mounds. There are also wells in the alluvial drift of the Ohio river which give large yields of a satisfactory water, exemplified by those at Metropolis.

Of the 73 surface water supplies, 36, or 49.3 per cent, are from streams practically without storage. Nineteen, or 26 per cent, are from impounding reservoirs. Thirteen, or 17.8 per cent, are from Lake Michigan and five, or 6.9 per cent, are from streams with or without storage and supplemented by wells. Fifty-eight per cent of the water supplies drawn directly from streams are treated by filtration or otherwise; 16 per cent of the reservoir waters are treated; all the supplies from Lake Michigan are treated and 3 of the 5 mixed water supplies are treated.

Some indication of the favor with which surface water supplies are considered by the public, is indicated by figures showing the number of persons per service. With a generally used water supply, the number of persons per service is from 5 to 6. In Illinois, the number of persons per service in towns having surface water supplies, is as follows:

For waters drawn from streams, 7.

For waters taken from impounding reservoirs, 15.

For waters taken from Lake Michigan, 5.2.

For waters of mixed origin, 8.1.

Rainfall records are available for a long series of years, but run-off records are very meagre. In a general way, it is found that the maximum annual rainfall for the entire state is 43.45 inches and the minimum 32.07 inches.

The variations in run-off are exemplified by the Rock river at Rockford in the north and the Kaskaskia river in the south. The northern river, with a rolling watershed, large areas of porous soil and many tributary lakes, has a run-off of 27.7 per cent of the rainfall. The Kaskaskia river, on the other hand, has a generally flat watershed and an impervious clayey soil, and the run-off from this watershed is 37.7 per cent of the rainfall. The Big Muddy river, however, with a watershed much like that of the Kaskaskia has a run-off of only 22.9 per cent of the rainfall. Beaucoup creek has a run-off of only 15.8 per cent.

A weighted average of run-off, which takes cognizance of the various watersheds, gives an average of about 30 per cent, but it is inadvisable in estimating the yield of a watershed for water supply purposes to count on a run-off greater than 20 per cent, or about 100 million gallons per square mile per year.

Referring to the quality of the surface water supplies of the state, it may be said in a general way, that they are all subject to high turbidities, are more or less highly colored and rather highly mineralized. Lake Michigan furnishes a water which, under normal conditions, is only moderately hard and free from turbidity and color. But generally speaking it is impossible to secure a useable supply with reference to turbidity within one-half mile of shore. The sanitary quality is also open to criticism at present as the lake receives the sewage pollution of various north shore communities.

The character of the streams vary widely. During periods of flood, all are excessively turbid, the color varying from light yellow to dark brown, depending on the surface soil. Some of the streams are clear during low water but some retain their turbidity even then. Waters stored in impounding reservoirs lose much of their turbidity and color, but rarely become clear enough for an acceptable water supply.

The mineral content of the streams varies greatly, with

\*Abstract of paper by Paul Hansen and Ralph Hilscher, engineer and assistant engineer of the Illinois State Water Survey, before the Illinois Water Supply Association.



a maximum of about 600 parts per million and a minimum of about 45 parts.

Although drawing from a surface stream or lake would seem to be a simple matter, much intake trouble has been encountered in connection with surface water supplies in Illinois. The most pronounced of these troubles have been along the Mississippi river, where shifting sand bars sometimes completely cover an intake and render it useless. Along Lake Michigan, intakes involve costly construction for the purpose of getting beyond the influences of high turbidities and excessive pollution. Difficulties are also encountered due to the obstruction of intakes with ice. The prime cause of the clogging of intakes with ice seems to be the entrainment of newly formed spicules and plates of ice by vortical currents induced by the suction of the intake pipe. These apparently can be eliminated only by securing an exceedingly slow motion of the water into the intake pipe. This has been successfully accomplished at the Naval Training Station, where a large area of slotted openings is used. Similar results have been obtained at Roger's Park, where the intake pipe terminates in a large steel cylinder perforated with numerous small holes.

### LIMITATIONS OF WATER FILTERS\*

#### Water Applied May Be So Polluted As to Make It Impracticable to Secure With Certainty a Satisfactory Potable Water.

It is often taken as a matter of course that a water filter of either the rapid or the slow sand type, will make pure in all its properties and absolutely satisfactory for all drinking purposes, any water, no matter how impure or turbid. It is unfortunately true that such perfection of operation cannot at all times and places be depended upon.

There seems to be no doubt that a water filter can only effect so much and no more in the way of bacterial purification. It is therefore necessary to consider how much of a burden a given raw water will impose on a filter and whether the filter can satisfactorily purify it with reasonably good operation. Efforts to fix a standard of burden or load for filters have so far been unsuccessful, for no exact relationship exists between the sanitary quality of the water and the number of bacteria present, either total or colon bacilli.

The quality of water from the bacterial point of view is generally indicated by the total number of bacteria at 20° C or 37° C on various media; or by special bacteria such as *B. coli* which may be considered a better indication of sewage pollution. The direct determination of disease-producing bacteria is practically ruled out by the difficulty in making such determinations, for it is not generally feasible to make them with precision and certainty. Moreover, we are not quite sure that the positive exclusion of certain organisms would be a guarantee that there were not present some other disease-producing bacillus which has not yet been definitely determined to be such.

The old German standard was to allow 100 bacteria per cc. in filtered water. This is a simple and in some ways useful standard and has been widely adopted in this country. Assuming a bacterial efficiency of the filters of 99 per cent, the raw water to give such a filtered water should have a bacterial content of not more than 5,000 per cc. An objection may be raised that by far the greater number of bacteria are non-pathogenic and no indication

of pollution or of any harmful qualities. For this reason, the determination of *B. coli* has come to be recognized as the most satisfactory, all things considered, of the possible methods of determining the pollution of water. It is well known that *B. coli* is found in the excrement from animals other than human beings, particularly domestic animals; also in considerable quantities on grain materials and tilled fields. Consequently, water running off from farms, pastures, etc., must necessarily contain considerable quantities of such coli, and under such circumstances they would in no way be evidence of dangerous pollution. Nevertheless, this is the single best means we have of determining whether a water is most probably wholesome or unwholesome. It is not conclusive or positive but is the best we have.

The International Joint Commission appointed by the United States and Canada to investigate the pollution of international boundary waters, with the idea of determining to what extent pollution must be limited in order not to endanger the health of the communities on the two sides of these boundary waters, has considered the questions whether it is possible to maintain the water in such shape that it shall be suitable for drinking water without treatment; and if this is not possible, what is the limit of pollution allowable before the filtration plant will be so overloaded that safe drinking water cannot be obtained by ordinary filtration?

In endeavoring to study the subject by compiling and comparing information from various cities it is found that such information is by no means exact in character, and the data from various cities are conflicting and even those from the same city at different times but under apparently similar conditions. Some cities which receive a water markedly poor as to *B. coli* content have a relatively low typhoid fever rate, while others which receive a rather good water and deliver for drinking purposes a decidedly good water show a much less satisfactory typhoid rate. A very important reason for this is, of course, the fact that only a part of the typhoid originates in water supplies and that the *B. coli* content of these and the typhoid fever rates do not necessarily bear any relation to each other.

The best that can be done is to consider all the data, properly weigh them and on the basis of judgment and experience come to some conclusion as to what is a proper limit for *B. coli* in water which is to be applied to filters. No rigid limit for any particular case can be fixed. It was concluded that water applied to filters should show by the presumptive test not more than 500 *B. coli* per hundred c.c. as a yearly average; or in other words, that *B. coli* should not be found more than 50 per cent of the time in 0.1 c.c. samples. For averages of shorter time—month, week or day—the allowable *B. coli* content may be considerably higher; but it is believed that for this purpose the averages based on a year's readings are more useful than averages for a shorter time with a correspondingly higher standard of allowable *B. coli*. This means, of course, that if the water as it reaches the filter is found to contain a greater average number of *B. coli*, communities or others which are polluting it must be required to reduce the bacteria content of the sewage or other polluting water.

In considering any particular case, due weight must of course be given to local conditions. If practically all the *B. coli* can be attributed to sewage pollution, a rigid interpretation of the standard would properly be in order. In the case of a stream passing through farming communities, however, where a considerable proportion of the *B. coli* may originate from sources other than sewage, the standard can be more liberally applied. Other factors to be considered are the distance of the water supply intake

\*Abstract of paper by George W. Fuller before the American Society of Municipal Improvements.

from the source of pollution, the degree of dilution of the sewage effluent, the nature of wind and water currents which may objectionably or favorably affect the movement of water towards or from the intake, and other factors of this nature. In other words, the standard should not be used as an exact and unalterable measure of pollution, but rather as a starting point for further investigation.

Percentages of purification are not always a good gauge of efficiency. Briefly speaking, 98 to 99 per cent is the fair average of bacterial efficiency of filters under ordinary conditions; but water with a high initial bacterial content will show a proportionately higher efficiency of the filter than a water low in bacterial content, and yet the resultant filtered water may be much less satisfactory. The total number of bacteria in the effluent should be considered as well as percentage of reduction.

Sterilization is usually provided for in modern filter plants as a reserve factor of safety and should always be available. The effective sterilization of an effluent which has been properly filtered will give a water which is most if not entirely sterile.

With these conditions in mind, it seems reasonably safe to say that a water having in its raw form a coli content not exceeding 500 per 100 c.c., based on yearly averages, will show in the water supplied to the consumers not more than 5 to 10 B. coli per 100 c.c. Such water, when properly sterilized, is believed to be a fairly safe water for drinking purposes and for all other domestic uses.

## PASADENA MUNICIPAL LIGHTING PLANT

### Steam Plant Operated in Competition With Private Hydro-electric Plant—Details of Plant and of Operating Costs.

Pasadena, Cal., a city of about 40,000 population, has been operating a municipal electric lighting plant for street lighting since July 1, 1907, and for commercial lighting since October 1, 1908. At the time this plant was proposed, the residents were paying 15 cents per k. w. h., which had been cut to 12½ cents by the time the city began furnishing commercial lighting. The city established a rate of 8 cents maximum, and the private company immediately began making flat rates so low as to mean a practical donation of the current. An ordinance was passed shortly after requiring that electric energy be sold and measured by meter. The city later reduced its maximum rate to 7 cents and at the same time the private company established a base rate of 5 cents. In spite of this, citizens supported the municipal plant to such an extent that the earnings warranted lowering the rate to a maximum of 5 cents and a minimum of 3 cents, and the power rates to from 4 cents to 1.2 cents. The private company immediately lowered its rate to 4 cents, which continued until September, 1913; but in spite of this difference the number of consumers of the municipal plant increased to 5,000.

The municipality believed that the company was undoubtedly losing money at the rates charged, its object being to drive the municipal plant out of business; it being able to do this because it was serving eighteen or twenty communities from a common hydro-electric system and could make up the loss from the other communities. The last California state legislature in 1913 passed an "Unjust Competition Act," which forbids such action by corporations, with the result that in September, 1913, the private corporation raised its Pasadena rates to those charged by the city of Pasadena, the law requiring it to

either do this or lower the rates in the other communities served by it to those obtaining in Pasadena. The law also requires utility corporations to file annual reports, and that made by the Pasadena company in January, 1914, showed that it had lost money under the charges of the previous year. During the same year the city showed by its report a surplus of approximately \$30,000 over all proper charges.

In 1909, a bond issue for extending the city's commercial service over the entire municipality having been carried by a seven to one vote, a proposition was made to the private corporation for the purchase of its distribution system; also one for purchasing electrical energy from it, provided it could furnish it cheaper than the city could generate it in its steam plant. The private corporation, however, made a counter-proposition to purchase the city's plant, but has refused to sell, although negotiations have been renewed from time to time. Present indications are that the company and the city will continue to compete on the basis of equal rates, with the argument of loyalty in favor of the municipal plant if the service rendered by it is equally good.

In discussing this matter, C. Wellington Koiner, general manager and electrical engineer of the municipal lighting department, said: "If the city of Pasadena had the right to regulate rates, why build a municipal plant? The answer is, that through no regulating body in existence in the United States to-day can a city regulate rates as low as can be made by a municipally-owned and operated plant when conducted as a business proposition. Heretofore, utility corporations have regulated the cities, instead of the cities regulating the rates for utility service.

"The saving resulting to the city of Pasadena, by reason of the difference in rate charged by its competitor before the city entered the field and the rates charged by its competitor in other towns the size of Pasadena since, amounts to \$731,084, more than the entire cost of the municipal plant."

The cost of the plant to July 1, 1914, has been \$697,505. After paying operating expenses, charging interest on the total investment, and charging off depreciation to the amount of \$130,871, the city has accumulated a surplus of \$71,110, which surplus has been invested in extensions to the plant.

The city generates electricity by a steam plant in which crude oil is used at prices ranging from 70 cents to 96 cents per barrel, equivalent to coal at \$3.25 per ton. It is claimed by the municipal department that its service is more reliable than that of the company obtained from the hydro-electric plant, since the latter service is liable to interruption by the effect of storms on long distance transmission lines.

In the year ending June 30, 1914, the output of the municipal plant was 5,793,290 k. w. h. The manufacturing cost was 0.767 cents per k. w. h., the distribution cost was 0.901 cents, the interest cost was 0.397 cents and the depreciation cost 0.473 cents; a total of 2.538 cents per k. w. h. for all current generated, or 3.105 cents for all current sold. The receipts were 3.724 cents per k. w. h. for all current sold. In estimating the interest cost, interest was charged on the entire value of the plant, although the total amount of bonds outstanding was but \$275,150, all 4 per cent bonds.

The depreciation was estimated as follows: "Years" representing the life in years and "per cent" the rate of the depreciation assumed: Station equipment, 25 years, 4 per cent. Poles, 16 years, 6.4 per cent. Wires, 50 years, 2 per cent. Miscellaneous, overhead lines, 20 years, 5 per cent. Underground cables and wires, 50 years, 2 per cent. Transformers, 25 years, 4 per cent. Meters, 25 years, 4 per cent. Arc lamps, 12 years, 8 1-3 per cent. Incandes-



cent street fixtures, 20 years, 5 per cent. Buildings and real estate, 20 years, 5 per cent. Furniture and fixtures, 10 years, 10 per cent. Tools and testing apparatus, 10 years, 10 per cent. Underground conduits, 40 years,  $2\frac{1}{2}$  per cent. Automobiles, trucks and motorcycles, 10 to 5 years, 10 to 20 per cent.

The earnings for the year were \$48,574 from street lighting and \$127,857 from commercial light and power. The rates for incandescent lighting were 5 cents for the first 100 k. w. h. per month scaled down to 3 cents for over 2,000 per k. w. h. The rates for arc lighting were from 4.9 cents for the first 100 k. w. h. to 4 cents in excess of 500 k. w. h. per month. The minimum monthly charge is 50 cents per meter of 3 k. w. capacity and 30 cents for each additional k. w. of capacity. Carbon and Gem lamps are renewed free. The power rates are 4 cents for the first 100 k. w. h. per month, down to 1.2 cents in excess of 3,000 k. w. h. The monthly minimum charge is \$1 per meter of  $1\frac{1}{2}$  k. w. capacity or less and 75 cents for each additional k. w. The street lighting rates are \$60 for 6.6 ampere arc lights, \$12 for 6.6 ampere Tungstens of 40 and 80 candlepower, \$48 for similar Tungstens of 200 candlepower and \$60 for those of 350 candlepower.

Of the total manufacturing cost of \$44,443, \$30,112 was for fuel oil, \$8,621 for wages at the station, \$3,208 for repairs. The distribution expenditures total \$30,328, of which \$4,831 were for the operation of public lights, \$787 for street incandescent lamp renewals, \$3,973 for commercial incandescent lamp renewals, \$14,511 for operating expenses pertaining to commercial light and power and the balance for repairs, public lamps, pole lines, meters, etc. The general expenditures totaled \$21,870, of which \$12,893 was for salaries, \$2,660 for office expenses and supplies, \$3,125 for advertising and soliciting business, and the balance for office rent, insurance, etc.

The net value of the plant at the present time is given as \$557,256, of which the largest items are \$168,416 for station equipment, \$159,002 for overhead lines for commercial service, \$9,344 for underground lines for commercial service, \$86,814 for overhead lines for public lighting, \$1,690 for underground lines for the same, \$8,525 for street lamps, \$66,997 for meters and \$37,166 for transformers.

The street lighting system consists of 259 enclosed arc lamps, 1,313 40 c. p. lamps, 15 60 c. p., 208 80 c. p., 46 200 c. p. and 11 350 c. p., all 6.6 ampere Tungsten lamps; also 5 40-watt red signal lights, 47 60-watt Tungsten alley lights and 1 100-watt Tungsten alley light. There are 994 ornamental standards carrying 2,710 lamps.

The plant equipment consists of 1,500 horsepower boilers of the B. & W. and Stirling type; 2,000 horsepower in cross-compound condensing engines and 2,000 horsepower in a Parsons steam turbine. It is proposed to install a 3,300 k. w. turbine which will increase the generating capacity to 6,800 k. w. There are 8,305 service connections, 6,954 meters and 610 transformers.

The output for street lighting last year was 1,037,586 k. w. h., and that for the commercial system was 3,699,685 k. w. h. Lighting at the plant and office consumed 36,360 k. w. h. There was a core loss on transformers of 259,094, a shunt loss on meters of 102,760, and copper and transmission losses of 657,805; a total amount generated and unpaid for of 1,019,659 k. w. h. The efficiency of the distribution system was 82.4 per cent, the load factor, as per peak load, was 34.09 per cent, the capacity factor was 21.69 per cent. The revenue per k. w. h. of station capacity was \$57.85.

#### CLEVELAND WATER WORKS IMPROVEMENTS.

Work on the filtration plant of Cleveland, Ohio, is progressing rapidly. The concrete work of the mixing chambers, coagulation basins and filters is about 75 per cent completed, and work on the brick superstructures will be

commenced about November 1. A contract has been let for the superstructure of a new high and low service pumping station, and the high service pumps have been purchased.

Work has also commenced actively on the new intake tunnel, which is to be lined with interlocking concrete blocks. There has been considerable preliminary work carried on in connection with this tunnel during the past year.

Plans are under way also for the new coagulant house, filter equipment and clear water reservoir; and a new distributing reservoir is contemplated.

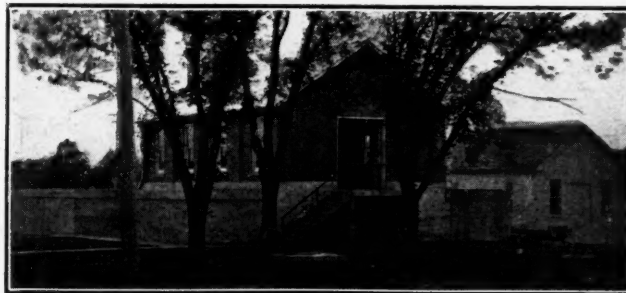
#### CHERRYVALE WATER WORKS

##### Motor-Driven Pumps and Rapid Sand Filters for a Small City.

Prior to 1912, Cherryvale, Kansas, obtained its water supply from a small lake from which the water was pumped by a steam pumping plant. In the spring of 1911 work was begun on a new supply and other improvements. Water is now taken from the Verdigris river,  $6\frac{1}{4}$  miles from the town, from which the water is pumped into a settling basin four miles distant, from which it flows by gravity to a filtration plant, from the clear well of which it is pumped into the distribution system and a standpipe. The pumping station at the river contains two 5-inch 2-stage turbine pumps direct-connected to 60 horsepower 3-phase 60-cycle 220-volt induction motors. At a speed of 1,150 r.p.m. each of these pumps can deliver 900 gallons per minute against a head of 180 feet through a 12-inch line leading to the settling basin. This basin has a capacity of 1,288,000 gallons and is on a hill 47 feet above the filter plant.

From the settling basin the water flows by gravity through a 12-inch line  $2\frac{1}{4}$  miles into coagulation basins, the level of water in these basins being controlled by a float valve. There are two basins, divided by a middle partition wall. In the mixing chamber, sulphate of alumina is added at the rate, under normal conditions, of .62 of a grain per gallon of water, and under severe conditions as high as 5.0 grains per gallon. The turbidity of the raw water varies from 50 to 1,000 and the alkalinity from 85 to 280 parts per million. The time of coagulation is  $1\frac{1}{2}$  hours. The coagulation basins are cleaned twice a year.

Seven feet above the bottom of the basin is a 12-inch effluent pipe which conducts the settled water onto rapid sand filters. There are four filter beds, each 10 feet by 12 feet and containing 26 inches of "Red Wing" filter sand on 10 inches of New Jersey gravel in three sizes. The filters are equipped with loss of head gauges and rate controllers. The operating gallery and stands are, however, not nearly as elaborate as in the case of the filter plants of larger cities, as may be seen by the accompanying illustration. The rate of filtration is 1.74 gallons per minute per square foot, which can be increased to 2 gallons, or 1,500,000 gallons in twenty-four hours. The filter

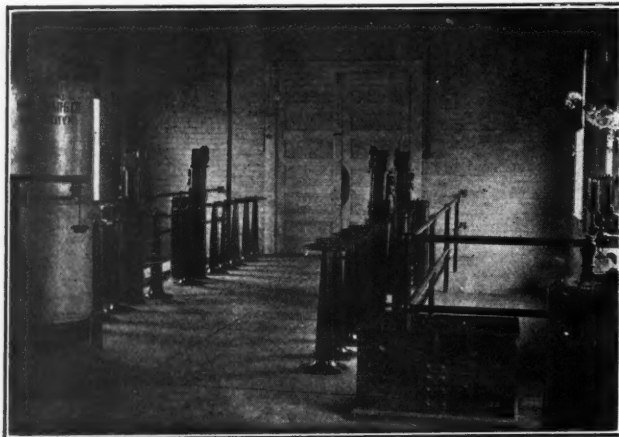


EXTERIOR OF CHERRYVALE FILTER PLANT.

beds are washed once a day, compressed air and water being used. The wash water averages about 3 per cent.

The pumps which supply the filtered water to the distribution system and standpipe consist of one 6-inch 2-stage turbine pump direct connected to a 100 horse-power 3-phase 60-cycle 220-volt motor, and a 5-inch pump of the same kind connected to a 70 horse-power motor, these pumps working against a head of 275 feet. There is also a 6-inch single stage double suction pump direct connected to a 20 horse-power 2-phase 60-cycle 220-volt motor, and a No. 1 Root blower connected to a similar motor of 10 horse-power, for washing the filters.

Both raw and filtered water are metered and the difference in the readings of these meters gives the amount of



INTERIOR OF CHERRYVALE FILTER PLANT.

wash water and waste. The old pumping plant can be started drawing from the lake in a few hours if necessary and is retained as an auxiliary supply. Meters are being installed on all service pipes, about 50 per cent being metered at the present time.

The cost of pumping twice is about \$30 per million gallons; the cost of the filter operator and the sulphate is \$6.40 per million gallons and all other expenses amount to \$30; giving a total cost of \$66.40 per million gallons delivered to the consumer.

For the above information we are indebted to the engineer of the water works, G. W. Pearse.

#### USE OF CONCRETE IN WATER WORKS CONSTRUCTION.\*

This paper does not pretend to advance any new theories, but is rather an effort to present in convenient form the general principles involved in the use of concrete in such structures as may be employed in connection with water works. "There is no recognized standard test or specifications now in use for concrete. There has not as yet been developed a set of standard tests or specifications, the use of which will in all cases guarantee entirely satisfactory finished work." That the cement and aggregate stand the laboratory tests is no guarantee that the workmanship will give the best of results.

Concerning sand, the author says: "Neither sharpness nor excessive cleanliness is worth seeking after if it involves much expense. Tests have shown conclusively that sand with rounded grains makes quite as strong a mortar, other things being equal, as does sand with angular grains. Comparative sand tests of cement-sand mortar should be based on compressive strength values instead of tensile strength values. The strength of all sand mortars is affected by the amount of water used over that required for normal consistencies. The more

water used the greater will be the loss in strength at early periods. A fine sand takes much more water to produce a certain consistency of mortar when mixed with cement than does a coarse sand. A fine sand makes a weaker mortar than a coarse, because of the lower density. The only substitute for natural sand for concrete that need be considered is pulverized stone, either dust and fine screenings produce in crushing rock or an artificial sand made by reducing suitable rocks to powder. The danger of using stone dust is failure to secure the proper balance of large size grains. The coarseness as well as the fineness of a good concrete sand is limited. The best sands will show not more than 40 per cent retained on a No. 10 sieve, and not more than 5 per cent passing a No. 80 sieve."

"Upon large or important structures it pays from an economic standpoint to make very careful studies of the materials of the aggregates and their relative proportions. W. B. Fuller has shown that by changing the ordinary mixture of water-tight concrete, which is about 1:2½:4½, and which requires 1.37 barrels of cement per cubic yard of concrete, by carefully grading the materials by methods of mechanical analyses he was able to obtain water-tight work with a mixture of about 1-3-7, thus using 1.01 barrels of cement per cubic yard of concrete. This saving of 0.36 barrel is equivalent, with Portland cement at \$1.60 a barrel, to 58 cents per cubic yard of concrete."

"A better and more uniform concrete can be made with a good machine mixer than by hand." "A plastic concrete of jelly-like consistency always produces stronger concrete than a wet mix and is preferred where conditions will admit of its use. It is absolutely necessary, however, in reinforced concrete to employ a consistency sufficiently wet to flow around the steel and into the corners of the forms and in rubble concrete, to flow around the large stones."

Concrete should never be placed in running water.

It is almost impossible to satisfactorily plaster a face of hardened concrete.

Concerning water-tightness the author says:

A wall of concrete may be rendered water-tight in various ways:

1. By accurately grading and proportioning the aggregates and the cement. The proportions employed to resist the percolation of water usually range from 1:1:2 to 1:2½:4½, the most common mixture being 1:2:4 or 1:2½:4½. With accurate grading by scientific methods, water-tight work may be obtained. For maximum water-tightness, a mortar or concrete may require a slightly larger proportion of fine grains in the sand than for maximum density or strength. In general it may be stated that in monolithic construction a wet mixture, a rich concrete and an aggregate proportioned to secure great density will in the majority of cases give the desired results. It is impossible to specify definite thicknesses of concrete to prevent percolation under different heads of water, because of variations in proportions and methods of laying.

2. By special treatment of the surface of the concrete. Various methods have been employed, such as plastering the surface of concrete with rich Portland cement mortar in proportions 1:1 or 1:1½. Water-tightness may also be secured by the use of a granolithic finish; by troweling the surface so as to produce a hard finish. Layers of water-proof paper or felt cemented with asphalt or bitumen or tar are extensively used, and sometimes asphalt alone. A mixture of alum and lye has also been used.

3. A water-proof concrete can be prepared by the application of fluates. The operation, however, requires a great deal of time and labor. By the application of an 8 per cent solution of potash soap, instead of water, in mixing, the concrete can be rendered water-proof, so as to fulfill all requirements as to permeability of water.

The first method suggested is unquestionably the best to secure permanent water-tightness, and the writer is not in favor of using water-proofing ingredients or of making surface applications except in cases where such may be required by reason of imperfections in the original concrete.

\*Abstract of paper by Edgar B. Kay before American Water Works Association.



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OCTOBER 22, 1914.

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### Municipal Competition with Public Service Companies.

The Public Service Commission of Pennsylvania has recently made a decision in a controversy between the borough of Bethlehem and the Bethlehem Water Company which is of interest to several other municipalities in the state, and has to do with a condition which exists in a number of cities throughout the country. The company has since 1886 been supplying water to a part of the city which was not reached by the borough's municipal system, but last year the latter plant began supplying a few streets in competition with the company. To meet this competition the company made special rates for the district where it existed; whereupon the borough complained to the commission that the company was discriminating against its other consumers by allowing to them less discount for prompt payment than it did to those where there was competition, the discounts being 25 and 40 per cent, respectively.

The commission, however, holds that this difference in rates is warranted by a "dissimilarity of circumstances and conditions" which would make inapplicable the statute's prohibition of discriminating rates; that unless the competition be met, the company would lose entirely the business and consequently the value of the investment in this part of the plant, which condition does not exist elsewhere in its territory. The fact that the company has admittedly been providing a good service, and that the value of the plant is greater than the face value of the stock and bonds combined, but that no dividends have

been paid, probably influenced the commission in its decision.

If the conditions are as just stated, justice to the company would seem to have required such a decision, although we can not but feel that the clause "dissimilarity of circumstances and conditions" had to be stretched somewhat to cover this case. But why should not the company have been the plaintiff? If it has been rendering good service and, with fairly economical management, has not been able to earn a dividend on unwatered stock, why should not the public service commission protect it from the competition of the borough, as it probably would from that of another company?

For a municipality to compete with a private company, and use its ability to obtain assistance from the public treasury or (what amounts to the same thing) to charge rates which correct book-keeping would show to be unprofitable; for a municipality to so act in an endeavor to drive out of business a private company which was first in the field seems to us as open to criticism as for a trust to kill off little competitors by temporarily cutting rates below cost. Where there is no state control, by public service commission or otherwise, there may be some justification of such action where adequate service or reasonable rates cannot be obtained. But a state commission is assumed to secure justice for both public service companies and municipalities, to compel the former to give good service and reasonable rates, and on the other hand to require the municipalities to deal fairly with the companies. And the latter would, it seems to us, include protecting the companies from the unequal competition which a municipal plant could generally furnish.

There is, of course, the other side, the case where the company refuses to give good service or exacts exorbitant rates and treats public protests with contempt (these are fortunately decreasing in number). We have endeavored only to show above in what way municipalities may be unreasonable and unjust, in our opinion.

The superintendent of the Pasadena, Cal., lighting plant, whose report is abstracted elsewhere in this issue, describes conditions in that city which he believes warranted municipal competition. It will be noticed that in this case the city is apparently "fighting fair," not endeavoring to reduce rates below those of the private company and keeping the municipal service on a paying basis; relying upon the character of service rendered to attract patronage, no doubt considerably assisted, however, by loyalty and popular feeling against the company.

### Raising Municipal Funds.

Cities throughout the country have been finding difficulty, during the past two months, in selling their bonds. They are by no means alone in this predicament, however, and there is every reason to think that, when money is again brought out for investment, municipal bonds will be more the favorite than ever. But rates are high, and may continue so for months—perhaps even three or four years. Under these conditions the "Bond Buyer" recommends that cities "carefully consider the issuance of a short term bond at 5, 5½ or even 6 per cent, before selling a long term bond in the present market and burdening present and future generations with a high interest charge. When the notes approach maturity, say in 1917 or 1918, the municipality may then be able to refund them with long term bonds" at a lower rate. A bond dealer who specializes in municipals believes that the more conservative banks and investors are now favoring an obligation of short maturity to one of long life, which would be an additional argument for taking such action.

## The WEEK'S NEWS

The Pacific Coast Highway—Cement in Portland, Me., and Concrete in Council Bluffs, Iowa—Paving in St. Paul, Minn., Riverside, Cal., and Chicago, Ill.—Typhoid in Providence, R. I., and Philadelphia, Pa.—Towns of Pennsylvania Fight Water Companies—Famine Still Here—New Lighting System for Hibbing, Minn.—Propose New Fire Laws for New York—New Motor Apparatus—Markets in Chicago and New York.

### ROADS AND PAVEMENTS

#### The Pacific Coast Highway.

Vancouver, B. C.—In addition to the great Canadian automobile highway now in course of construction from the Atlantic to the Pacific, of which Vancouver is the western terminus, the Pacific coast highway extending from San Diego to Alaska via Vancouver is being linked up, and by the end of 1915 motorists will be able to make the trip from southern California to British Columbia over a hard-surfaced road. The route will include the principal cities on the coast and will afford one of the most attractive motor trips on the continent. There has been great activity in road building in California, Oregon, and Washington, and several thousand miles of fine roads have been added to the highways in those states in recent years. This activity has been encouraged, and is largely due to the increased interest in motoring and the great number of automobiles in use on the coast. Various sections of the Pacific-coast highway have been linked up in the states mentioned, and it is now possible to make the trip by motor for most of the distance from San Diego to Seattle. Approximately \$7,000,000 was spent on road building in British Columbia in 1913, and every settled section of the province is being provided with good roads.

As practically all the original transportation routes in this district were from east to west, especial attention is now being given to the building of north and south lines of both highways and railroads. The purpose is to open up lines of coastwise communication connecting the main arteries of traffic extending from the eastern and central provinces to the Pacific coast. This is especially true of motor roads, and at the present rate of progress in construction British Columbia will soon be provided with highways suitable for motor traffic from the border of the United States to Yukon Territory. That portion of the British Columbia section of the Pacific highway from Vancouver to Blaine, Wash., was recently definitely marked, and other divisions in the province are being connected. The plan of the Pacific Coast Highway Commission, which initiated and has been the moving factor in the construction of a motor trail along the Pacific coast, is ultimately to include Yukon Territory and Alaska.

Great progress has also been made this year in road-building in Yukon, among the most important stretches of which is the overland road between Dawson and Whitehorse, on which grades are being reduced, sharp

curves eliminated, and fills and surfacing added. The engineers detailed by the Alaskan Road Commission to survey the proposed Government highway from Skagway to the summit of the White Pass have completed the work and are now preparing maps and data for the route. The road is to connect at the international boundary line at the summit of the pass with the Canadian system of roads reaching to the Atlin section, and to Yukon as far north as Dawson. The road from Skagway to the summit will have a grade averaging less than 5 per cent and at no place will it exceed 8 per cent. With the completion of this route motorists living in any section of the coast country will be able to make the journey from southern California to Alaska with such side trips as they may desire to include.

#### Suggest Volunteer Road Machinery Companies.

Baton Rouge, La.—State Highway Commissioner Frank Buffum, of Louisiana, suggests that a road building machinery company be organized in the best counties of the state, and says he could practically guarantee it would not cost a member a cent. He said it would do more for better roads than any move made so far. The plan of Mr. Buffum is that sixty men underwrite a \$6,000 expenditure for road machinery. When the machinery arrives it will be rented to property owners who desire good roads in front of their farms. The rental will pay for the machinery and those who underwrite the purchase will not be out. The equipment he contemplates consists of a large traction engine, three graders to be used tandem, a scarifier, a rooting plow and culvert machinery.

#### To Test Convict Road Law.

Frankfort, Ky.—Test of the efficacy of the act of 1914 declaring highways connecting county seats public works, to authorize the employment of convicts on highway construction in Kentucky, will be made in a short time, as soon as an order of the Lawrence County Court demanding the services of twenty convicts from the State Reformatory here is served on Warden Wells. It is understood he will decline to surrender custody of the men on the ground that the constitution requires the employment of convicts inside the prison walls. If he does a suit will follow. The Prison Commission wants the question of employing convicts on the public roads settled. State Road Commissioner R. C. Terrell said that as soon as the request comes he will send engineers to survey the proposed county seat route in Lawrence County.

#### Cement Road in Portland, Me.

Portland, Me.—The work of rebuilding Cottage street, the Shore Road, South Portland, is rapidly approaching completion and the road has now been opened to travel. The section that has been improved was one of the worst in the entire length of the famous shore drive. The work is almost entirely cement construction, granite blocks being used only on a small hill. It is planned to continue the construction another year and in time carry the new work for the entire distance to the Cape Elizabeth line. The entire contract was built upon specifications prepared by the Maine State Highway Department. A section of the road is shown in the accompanying illustration.

#### Paving Work in St. Paul.

St. Paul, Minn.—Street paving laid in St. Paul in the season just closed has cost about \$1,000,000. The big program mapped out in the spring involving sixteen miles of paving, practically has been completed. The great bulk of the paving laid this year was creosoted wood blocks. The Uni-



Courtesy, Portland (Me.) Evening Express & Advertiser.  
PORTLAND, ME., CEMENT ROAD.



versity avenue job is said to be the largest creosoted block project ever laid, being about 125,000 square yards. Robert street, which was not in the original program, remains to be paved at a cost of \$19,000. In addition nearly thirty miles of roads leading to St. Paul have been improved under the direction of County Surveyor J. H. Armstrong this season. He has nearly completed his season's program at a cost of \$80,000 to \$90,000. Most of the work has been done in Ramsey County, but Mr. Armstrong has improved roads in Anoka, Hennepin and Dakota counties as well, so as to make it easier to reach St. Paul. Grading on the scenic highway on the north bank of the Minnesota River south-west of Fort Snelling is completed. Two and one-fourth miles of the road have been improved with clay and gravel. Several other roads have been improved similarly. Asphalt and asphalt macadam have been used in other places. A large program has been mapped out for the coming year. Besides the work indicated, which has been done by contract, a repair crew of three to ten teams with a sufficient number of men has been engaged constantly improving Ramsey County highways.

#### Ruling Holds Up Road Building.

Madison, Wis.—The "force clause" of the state highway law has been set aside by the state supreme court, but the arguments made against this clause were declared not to apply to the remainder of the law, which is upheld. The "force clause" was that section which provided that when freeholders in any section contribute any sum of money for the construction or improvement of roads, that the town, county and state must contribute six times that amount for the roads in question. The invalidation of this clause, according to State Highway Commissioner A. W. Hirst will hold up \$900,000 worth of good roads this coming year. The case in question was entitled, State ex rel Orrin Carey, petitioner and respondent vs. Clinton Ballard, John Merritt and Joe Kohl, members of the town board of the town of Grand Chute, defendants and appellants. The court declared that the freeholders are not a political unit, and therefore cannot force the levy of a tax, as can a duly elected body.

#### Five Miles of Concrete Paving.

Council Bluffs, Ia.—After more than two years' investigation by city officials, commercial club members and others, it was decided this year that concrete paving had proved successful enough in other places to warrant its use in Council Bluffs. As the result nearly five miles of the streets of the city have been ordered paved with Sioux Falls granite concrete. This spring the city council took the first step and ordered three miles and then some eight, or ten other streets paved with concrete. The work on the South avenue contract is practically finished, about 7,400 lineal feet in all having been done. The street is the main trade route into the city from the south and its improvement will mean considerable both for the city and the contributing farm lands to the southeast. The concrete paving on South avenue is twenty feet wide, eight inches thick at the center and six inches at the side, giving a good crown. Outside of this, at each side, a crushed rock road retainer, three feet wide, is to be rolled into the roadbed to a depth of one foot. This will add another six feet to the artificial surface. On each side of this the street is to be graded up for ten feet, so it will really be a 40-foot drive.

Work is also being done on the North Broadway street, which is now being graded. This is on the Lincoln highway.

Since the South avenue work, which is here illustrated, was started, the city council has let bids for some two or three miles more of the granite-concrete paving and within two years it is predicted Council Bluffs will have ten miles of concrete paving in addition to the thirty-odd miles of brick streets now in use. The South avenue work is being done at \$1.36 a square yard and from there the price ranges to \$1.48, depending on the length of haul necessary to put the material on the site of the work. There is now about \$100,000 worth of concrete paving ordered for next year.

The joint used is Carey's Elastite paving joint, consisting of two layers of thick felt with asphalt between, half an inch thick total. The joints are laid 30 feet apart transverse to the road. The cement used is Iola Portland cement, the concrete being a 1-2-3 mixture throughout. Particular care is taken in floating and finishing to bring sufficient sand and cement to the surface so as not to expose aggregate. The surface is being left slightly rough as broomed.

#### Improvements in Riverside, Cal.

Riverside, Cal.—Work will commence within the next few weeks on public improvements requiring an expenditure of approximately \$60,000. The Johnson-Shea Company of this city was the successful bidder for a mile of macadam roadbed, combination curb and gutter and sidewalks for \$31,859. The Pacific Electric has just completed a double-track line over this thoroughfare, and will improve its portion of the street. The construction of drainage conduit at an estimated cost of \$30,000 is proposed. Concrete ornamental lighting posts are to be installed on another street.

#### Chicago Paving Work.

Chicago, Ill.—The amount of pavement laid in Chicago this year compares favorably with work done in the past years. So far this year there has been a total of 2,286,365 square yards of pavements contracted for, exclusive of private contracts. This amounts to about 143 miles of new work. The following table shows the different kinds of pavement, their percentage of the whole, amount under contract and amount completed to date:

Kind	Under Contract Miles	Amount Completed Miles	Percentage of Total
Sheet asphalt	55.13	27.62	38.6
Granite asphaltic concrete	16.38	5.20	11.5
Granite asphaltic macadam	28.14	7.68	19.07
Brick	29.09	8.05	20.3
Creosoted block	11.00	8.00	7.7
Granite	3.16	0.50	2.2
Total	142.90	57.05	100.00

The above table shows that of the 143 miles nearly 40 per cent. of the work is completed. It is planned to finish about 110 miles for the year. The contracts to be carried over to next year are those in which new water mains, telephone conduits or new street car tracks are to be laid. In general the northwest section of the city has been do-



Courtesy, Council Bluffs (Ia.) Daily Nonpareil.

SECTION OF CONCRETE ROAD IN COUNCIL BLUFFS.

ing most of the paving this year. In this section sheet asphalt has been laid extensively. On the south side there has been a large amount of asphaltic macadam laid and some sheet asphalt. On the west and north sides paving has not been so extensive.

## SEWERAGE AND SANITATION

### Diphtheria in Pennsylvania Towns.

Wilkes-Barre, Pa.—South Auburn and some of the smaller towns near Meshoppen are threatened by an epidemic of black diphtheria. Three are dead and several stricken in one family. The public school of Auburn has been closed and black diphtheria cases are reported at Meshoppen and one at Laceyville. State authorities are now lending their efforts to wipe out the disease.

### Razing Buildings for Sanitation.

Pittsburgh, Pa.—The City Bureau of Sanitation, John A. Sauer, superintendent, is making vigorous efforts to improve the sanitary condition of Pittsburgh, and with that end in view more than 700 notices to property holders have been sent out, warning such owners that their properties must be made sanitary either by razing the buildings or repairing them. Up to October 1 the bureau had 151 dilapidated or unsanitary buildings torn down and 81 repaired. Unless the buildings are made sanitary and safe to live in, they will be torn down or repaired by the city at the property holders' expense. That is, liens will be placed against such properties for the costs sustained in razing the buildings or repairing them.

### Typhoid Spreads in Providence.

Providence, R. I.—Strenuous efforts are being made by the officials of the health department to stamp out the spread of typhoid fever in the southern portion of the city, which in the past three weeks has assumed the proportions almost of an epidemic. No less than 95 cases of typhoid are on record at present in the department office, and new victims are being reported almost daily. Superintendent of Health Charles V. Chapin is of the opinion that the cause of the greater part of the cases is unsanitary vaults in the neighborhoods affected, and steps are being taken to eliminate the danger by placing large quantities of lime in the vaults. No less than five barrels of lime have already been distributed in one small district in the campaign. Dr. Chapin states that while the number of cases reported is not sufficient to justify the term epidemic, it is large enough to cause the health department serious concern and to lead it to take precautions against the disease. The typhoid during the fall has shown a marked tendency to attack widely separated neighborhoods, and to confine itself to these neighborhoods, with the result that a large number of the cases are grouped into small districts, while the number of isolated cases is small.

### Typhoid Conditions in South Philadelphia.

Philadelphia, Pa.—There has been less typhoid fever in this city this year in proportion to the population than in any year in recent history. The only drawback to making the showing a remarkable one is that in South Philadelphia, where there are twelve miles of solidly built-up streets without sewers, there are twice the number of typhoid cases during the eight months of 1914 for each 100,000 of population than in any other section of the city. Compared with West Philadelphia the difference is fifty cases south of Chestnut street for every 100,000 persons as against twenty per 100,000 population in all West Philadelphia. These facts, the result of independent investigations, are contained in reports made by Chief Davis, of the Water Bureau, and experts who have been investigating and studying typhoid in this city for a year. The report of the latter has not yet been published, but Director Norris, who is interested in the living conditions in Philadelphia as president of the Housing Commission, says that Chief Davis' report coincides with that of the experts that the excess number of typhoid fever cases in South Philadelphia is the result of lack of sewers, since the same source of water supply is provided for other sections of the city where typhoid is but 50 per cent. of that in South Philadelphia.

## WATER SUPPLY

### Meters Popular in Philadelphia.

Philadelphia, Pa.—The number of applications for water meters received in the Bureau of Water is increasing day by day, according to Carleton E. Davis, chief of the water bureau. At present about 300 per week are coming in. As all new meters must be installed before the first of December in order that the properties affected may be placed on meter rates for the year 1915, it is expected that the number of applications will increase daily. Since the first burst of interest in meters, when councils permitted their installation more than a year ago, there has been a steady demand for them. The majority of applicants are householders. Experience has demonstrated that few families use more than the minimum allotment of water, which costs \$5 a year. This added to the price of the meter brings the first year's water bill below the average water rent at fixture rates. Thereafter the saving is considerable, the cost being \$5 a year, as compared with \$12 to \$16. Chief Davis reports that many manufacturers are installing meters, some who have been large users of water. He told of one concern which was suspected of wasting water. The water bureau put a meter on the supply pipe to prove its charges. The manufacturer immediately took steps to prevent the waste of water, and discovered he could operate his plant at meter rates cheaper than by fixture rates by preventing waste.

### New Standpipe Completed.

Perth Amboy, N. J.—The residents of the northwestern section of the city have now reached the fulfillment of the plans long under way in the water department to provide them with a plentiful supply of water. The standpipe on the poor farm has been completed. The Chicago Bridge & Iron Works, who built the steel structure, have completed the painting. All the connections, according to City Engineer Mason, have been made and the standpipe filled from the Runyon Waterworks, through the city mains. The tank is eighty feet high and forty feet in diameter, its capacity being 750,000 gallons, calculated to last that section three days or more. The cost of the structure was \$11,460, the lot having been donated by the city.

### Claims Damages for Electrolysis.

St. Paul, Minn.—The water board has decided to present to the street railway company claims for all damages discovered as the result of electrolysis. After the company pays these claims it will be asked to co-operate with the city in investigating conditions and installing a return system which will prevent, as far as possible, damage from electrolysis in future. The board accepted and approved the report of Ray Palmer, commissioner of gas and electricity for Chicago, agreeing to follow its suggestions. There are damage claims pending against the company for specific injuries to water pipes amounting to \$250. Including the damage on West Third street this may reach to about \$1,200.

### Claims Damages for Drinking River Water.

Tacoma, Wash.—The health department sanctioned the use of Puyallup river water in the mains during the recent water famine. Now a claim for \$5,238 has been filed against the city by a man who alleges that he became sick through drinking the water.

### Towns Attack Water Monopoly.

Harrisburg, Pa.—Charging discrimination in rates and refusal to extend mains, many complainants from suburbs of Philadelphia appeared before the Public Service Commission against the Springfield Consolidated Water Company. Complaints had been filed by the boroughs of Morton, Alden, Clifton Heights, Darby, Eddystone and Glenolden. The commission heard C. B. Williams, of Philadelphia, present a statement of valuation giving as the total value of the properties of the company, which contains 36 corporations, \$7,542,671. Of this \$5,980,506 was given as the structural value; \$1,162,165 as the going value and \$400,000 as water rights. The company's revenue for 1913 was given as \$637,188 and the operating charges, ex-



clusive of interest and such charges, as \$180,844 for last year. The case was continued until the company can furnish certain data regarding service and rates in the various boroughs near Philadelphia.

#### Towns Join in Rate War.

Pittsburgh, Pa.—The city of Pittsburgh's first important case before the Public Service Commission will be brought in the near future, according to a report made to the committee on filtration and water by City Solicitor C. A. O'Brien. The city will act in conjunction with the boroughs of Knoxville, Mount Oliver, Carrick, Crafton, Ingram and Lower St. Clair, and will engage an engineer to make a supplementary survey and the independent water companies, which supply the boroughs and a portion of the city, will be charged with collecting exorbitant rates.

#### Famine Still Here.

Baltimore, Md.—Owing to the long-continued drouth the city reservoirs have seldom, if ever, been so low this late in the fall season and the city officials are taking every possible precaution to guard against waste. The police and fire departments and the street cleaning department, as well as the United Railways, which uses much water in street sprinkling, have been notified by the water engineer's forces to use no water except where absolutely indispensable. One reason undoubtedly for this unusual dearth of water is due to the continual increase in the use of flush closets and modern plumbing generally through parts of the city where such improvements were little used before the gradual completion of the sewerage system. Mayor Preston asked the police board to instruct the patrolmen to pay special attention to garages and enforce the laws regarding the use of water. With the completion of the Loch Raven dam and the filling up of the new reservoir, most of the need for economy will cease. Just at present, however, the water engineer's department declares it is vitally necessary.

Lee, Mass.—The town of Lee is practically without water. The pressure has all disappeared. All the schools were dismissed because water could not reach the school buildings. A force of men was sent to Laurel Lake to connect the water company's pipes with the lake and pumping was begun the next day. Fire Chief Boardman had hose laid in various places to the Housatonic River and stationed the engines, and he was on duty with members of the Lee department fearing fire and no water in the mains. All of the mills have been warned against using the town water and the paper mills have resorted to filtering river water for their works.

New Brunswick, N. J.—The city is still in the grip of the water famine. The supply is drawn from Lawrence Brook. This is now almost dry—as can be seen from the illustration, which is a view from a point about half a mile above the intake. Although the city is getting water free from some of the local factories, yet the relief is very small. A few days ago the water had fallen below the intake level so that the pumps could not operate. Some water was secured from adjoining ponds so that the level was raised—as shown in the other illustration. Following a conference of councilmen, fire, water and health commissioners, plans are to be drawn by City Engineer Asher Atkinson for raising the dam at the pumping station three

feet. This would give an additional storage supply of 75,000,000 gallons. It would be impossible to raise the dam any higher, as the water would back up upon adjacent property. It has been figured that this plan would cost the city \$13,000. Land has also been purchased for the erection of a standpipe to increase the water supply at the reservoir. The reservoir is a little over fourteen feet.

Lancaster, Pa.—Reports at the meeting of the Water Committee of City Councils showed that the consumption of water in the city for the month of September increased more than 202,000 gallons daily. This added to the fact that the 10,000,000-gallon pump at the water station is undergoing repairs and make waste of water under the present circumstances is dangerous. The city at the present time is dependent for its water supply upon the 12,000,000-gallon pump and the consumption of water many days recently has necessitated pumping at the rate of 13,000,000 gallons, thus overtaxing the capacity of the only pump now in service.

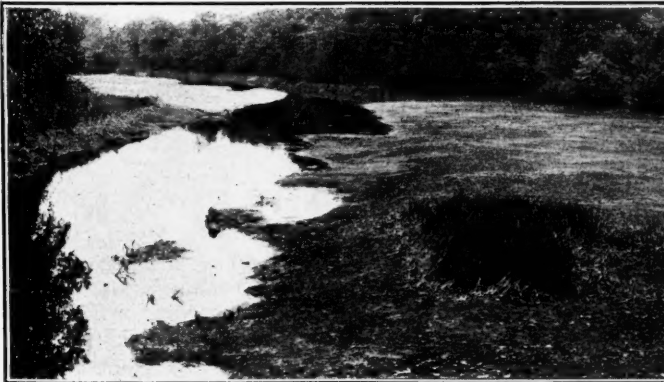
#### Test New Supply.

Marion, Mass.—The ten-day test of Marion's new water supply, as required by law, has been completed and a favorable report of its analysis from the Massachusetts State Board of Health is expected. The water commissioners of Marion have felt that the town needed an auxiliary water supply. The old plant was capable of supplying a sufficient amount of water for nine months in the year, but during the three summer months, for the past ten years or so, there has been a general drouth and the supply of water has been far from adequate. To remedy this, the town has had ten wells drilled, about 1,500 feet from the old pumping station, and located on the same watershed, to be used as an auxiliary supply during the summer months. For ten days the pumping from the new wells was continued without a stop, and samples of the water were sent daily to the State Board for analysis. But five of the wells were tested, since they are less than twenty-five feet apart.

## STREET LIGHTING AND POWER

#### Hold Gas Company to Thermal Standard.

Chicago, Ill.—The "saving clause" in the rules recently issued by the state public utilities commission will prevent the Peoples Gas Light and Coke Company, temporarily at least, from making a profit of \$2,500,000 annually, according to a report submitted to the council by Montague Ferry, commissioner of public service. Mr. Ferry's estimate is based on the new Illinois regulation, which, as interpreted by the department, permits a heating value of 520 British thermal units per cubic foot of gas. At the present time the gas furnished the people of Chicago has a heating value of 685 B.t.u. This means that 685,000 B.t.u. are sold for 80 cents. A reduction to a 520 standard would mean that 520,000 B.t.u. for 80 cents would be received. On the above basis the actual value of 520 B.t.u. gas would be 19.3 cents less per thousand cubic feet. The low standard of heat value created by the public utility commission will permit the use of less volatile and cheaper coals and the production of gas as a by-product of coke manufacture. It is believed that the adoption of the by-products coke



Courtesy, Newark (N. J.) Evening News.  
The River Water Source.



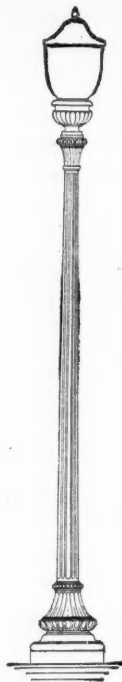
NEW BRUNSWICK'S DROUGHT.

The Pumping Station.

oven process will make possible a rate of 50 cents per 1,000 feet to those who purchase gas for domestic uses and as low as 30 to 40 cents to very large consumers. The substance of the "saving clause" is that the commission will not permit a reduction in the quality of service rendered by a utility company, even though it is authorized by the rules, until a new rate determination is made.

#### Hibbing's New Lighting System.

Hibbing, Minn.—Municipalities striving to improve their illumination are showing an interest in the distinction to which Hibbing lays claim as having now the most novel and effective lighting system in the world. Hibbing has installed for her street and park illumination, a lighting system considered a radical departure from methods accepted as standard, but nevertheless conforming with good lighting practice. Not only was the city's lighting problem solved with a view of highest lighting efficiency, but with a fine regard for decorative principles as well. Much of the work was accomplished by Mr. Elmer P. Morris, sales agent for the Central Foundry Company, 136 Liberty Street, New York, through whose efforts, three hundred and fifty-five other cities are today equipped with adequate lighting systems. Mr. Morris has closed an order with Hibbing for 511 "Morris" Ornamental five-light tungsten standards for street illumination, as well as 200 "Morris" single light units designed for the new nitrogen lamp, to be used in lighting the city's parks. This installation is in addition to 165 five-light poles already in service. The two distinct types are shown in the accompanying illustrations.



HIBBING'S NEW LIGHTING.

### FIRE AND POLICE

#### High Fire Losses in Louisville.

Louisville, Ky.—The last fiscal year of the city, ending September 1, was the worst year for fires that the city has experienced. From September 1, 1913, until September 1, 1914, the Louisville Fire Department responded to a total of 1,227 alarms, an increase of 48 over the previous twelve months. The fire losses in the fiscal year, 1913-14, more than triple those of the losses in the fiscal year, 1912-13. This statement is based upon the amount paid out by insurance companies. The amount of actual loss entailed cannot be obtained, as in many instances no insurance was carried.

The sum paid out by the insurance companies on fire losses for the past fiscal year was \$754,452. During the previous twelve months it was \$205,285. The total insurance carried upon property where fires occurred was \$4,933,287. In 43 cases it was necessary to send in extra alarms, either second, third, fourth or special alarms, calling additional apparatus to the scene to combat the flames. The water tower had the easiest time of any of the companies in the department, responding to but 14 alarms and traveling but 235 blocks.

#### Propose Drastic Fire Laws.

New York, N. Y.—Fire Commissioner Robert Adamson proposes to launch a campaign for revolutionary amendment of the fire prevention laws. It was announced that unusual celebration of "Fire Prevention Day" was meant chiefly to prepare the way for a safety propaganda and to arouse public interest. Under the bill which Commissioner Adamson proposes to submit to the next Legislature, the man who has a fire will not be a subject for sympathy, but will be regarded as a public enemy on the ground that he

probably has endangered lives and property in the community. One provision will end free fighting of fires caused by carelessness. Commissioner Adamson proposes that the law shall provide that every person on whose premises there is a fire, after he has been warned that he is violating fire prevention regulations, shall pay all the cost the city is put to in extinguishing the fire and for all loss his neighbors suffer. In the celebration more than 50,000 placards were displayed in street cars, department stores, on taxicabs, the bridges, and on billboards throughout the five boroughs. Every moving picture house reeled off at its opening and closing a fire prevention message. In the morning there was a parade of fire engines carrying banners that told of the fire waste in America, amounting to \$416 a minute and \$25,000 an hour. In each public school there was a fire drill and a lecture on fire prevention, which the students were told to repeat to their parents. Mayor Mitchel and Commissioner Adamson visited several schools and outlined the need for new public attitude towards the person who permits a preventable fire. Recently the department made inspectors of uniformed firemen, and set them to work at the rate of 100,000 inspections a month. Immediately came terrifying reports from the men who went to cheap lodging houses. Several hundred proprietors of such places were warned.

#### Business Section Burns.

Spencer, W. Va.—The entire business district of Spencer has been destroyed by fire with a loss of approximately \$300,000. The fire started in a fruit store and spread rapidly because there was no water with which to fight the flames. Little rain has fallen throughout this section in the past two months.

### MOTOR VEHICLES

#### New Tractor Received.

Wilmington, Del.—The new tractor of the Friendship Fire Company has arrived and was taken to the engine house of the company. It is a Christie Front fire tractor made by the Front Fire Motor Co., Hoboken, N. J., and is a duplicate of machines owned by the Brandywine and Weccacoe Fire Companies.

#### New Pumping Engine Accepted.

Dallas, Tex.—The new American-La France automobile pumping engine recently purchased as an addition to the fire department equipment tested and accepted by the Board of City Commissioners on a thirty-day test by Fire and Police Commissioner Blaylock. The contract called for pumping pressure of 120 pounds per square inch at the engine. The engine, during the test, was run up to a pressure of 175 pounds. Through a "double siamese" the engine threw water at the rate of 1,250 gallons per minute when a two-inch nozzle was used, and easily made the stipulated capacity of 1,400 gallons per minute with more than one nozzle in use. The engine is claimed to be the biggest in the South. A report, prepared by Acting City Engineer Powell, showed that with an engine pressure of 160 pounds the engine pumped 1,560 gallons of water per minute. The specifications called for an engine pressure of 120 pounds and for a pumping capacity of 1,400 gallons per minute.

#### New Combination for Andover, Mass.

Andover, Mass.—The new automobile fire engine which the town voted to purchase in March has arrived and been placed in service. It is capable of pumping from 350 to 987 gallons of water per minute. The speed and hill-climbing tests came up to the full expectation of the officials. From records kept by both the engineers and the makers of the truck every test exceeded those called for in the contract.



HIBBING'S NEW LIGHTING.



A stream from a 1¾-inch nozzle was thrown 175 feet. The machine is the product of the American-La France Company of Elmira, N. Y. It is equipped with a six-cylinder of the newest pattern. It has a chemical tank with 250 feet of hose attached. The main body of the car will carry 1,200 feet of regular fire hose. There are also a 24-foot extension ladder and a 20-foot roof ladder. It is equipped with a revolving cellar nozzle. Among the other important items of the equipment are two 3-gallon Babcock chemicals, Detroit door-opener, 15-gallon fuel tank back of the seat, a 30-gallon gas tank in the rear of the car, 12-inch locomotive bell, latest type siren horn, towing hooks on the back of car to pull down burning timbers or for towing purposes, 10 feet of soft suction hose, and 20 feet of rubber hose, axes, bars, pike-poles, etc. The engine is rated at 105 horsepower, and although slower than the truck purchased three years ago, can attain a speed of 45 miles an hour. Being more powerful than the other it can climb hills at a rate of about five miles an hour faster.

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## GOVERNMENT AND FINANCE

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### New Charter Defeated.

Santa Cruz, Cal.—Decisive defeat overtook a proposal for a new city charter, voted upon at a special election here. Lower salaries for the Mayor and Commissioners and greater appointive powers for the Mayor were features of the document. The vote was 775 to 1,426.

### Recall Election Carried to Court.

Salem, Ore.—Whether the recall provision of the constitution is self-executing, and whether an appointive officer can be recalled, are two of the questions which will be adjudicated in quo warranto proceedings instituted in the Supreme Court to oust officers recently recalled in Columbia County. Possibly the court will also be asked to decide whether it is the duty of the county or the state canvassing board under the County Attorney bill to canvass the vote cast for County Attorney. Quo warranto proceedings to oust District Attorney W. B. Dillard from his office were instituted by Glen R. Metsker, elected at the Columbia County recall election to succeed Dillard, and similar proceedings were instituted to oust W. A. Harris, the county judge, from his office. Dillard was appointed by Governor West, and attorneys declare there is a question, even should the recall provision be held to be self-executing, as to whether it applies to an appointive officer. Until the County Attorney bill became law, the state canvassing board was vested with power to canvass the vote, and the Governor issued a certificate of nomination to District Attorneys, but in the recall election the Board of County Commissioners canvassed the vote, and the County Clerk issued the certificate. The Attorney-General recently held that this was proper. It is being questioned by those combatting the recall election.

### The Budget of Portland, Ore.

Portland, Ore.—Heads of various municipal departments have asked the council for a total of \$4,724,469 for 1915. Of this sum the Water Bureau asks for \$1,271,262, deriving its revenue entirely from water charges, leaving a total of \$3,453,207 to be derived from the general fund which is maintained from general taxation, license fees, franchises and other incidental sources. The estimated receipts from license fees, franchises and other sources of revenue total \$761,051 and the estimated unappropriated balance in the general fund which will be carried over to next year is \$404,000. These sums deducted from the estimated expenditures from the general fund leaves a balance of \$2,284,156 which must be raised from taxation. Without any slashing of the estimates whatever a 7.7-mill levy would provide sufficient revenue, but with the trimming to which the estimates will be subjected by the budget committee they will be reduced between \$300,000 and \$400,000, which will make it possible to reduce the levy to 7 mills or less for the coming year. The budget committee consisting of Commissioner Bigelow, of the Department of Finance; Commis-

sioner Brewster, of the Department of Public Affairs, and City Auditor Barbur, have begun work on the budget. The estimates compiled by Commissioner Daly of the expenses of the Water Bureau for 1915 total \$1,271,262 as against an expenditure for the present year of \$1,189,396. The reason for the increase is due to the fact that Commissioner Daly contemplates expending approximately \$100,000 in improving the Bull Run headworks, \$113,000 in extending the big 30-inch main to the Peninsula district and \$40,000 for extending the 16-inch intermediate service in the Irvington district. The amounts asked for, as compared with last year's appropriation, are: Mayor Albee, Department of Public Safety, \$1,479,842.51, \$1,129,012.36; Commissioner Bigelow, Department of Finance, \$54,821.87, \$46,375.43; Commissioner Brewster, Department of Public Affairs, \$263,104.53, \$235,565.48; Commissioner Daly, Department of Public Utilities, \$532,948.84, \$599,061.55; A. L. Barbur, City Auditor's Office, \$58,000.00, \$68,861.25; Commissioner Dieck, Department of Public Works, \$498,250.00; \$515,845.00.

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## STREET CLEANING AND REFUSE DISPOSAL

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### Garbage Cans Under Streets.

Boston, Mass.—Scores of street refuse barrels that disfigure the appearance of Copley square and sections of Tremont street are to be hidden in vaults beneath the sidewalks, according to plans that Mayor Curley and Commissioner Louis K. Rourke of the public works department are to carry out this winter. The commissioner is to keep the full complement of his men this winter and is to utilize them in constructing these vaults.

### Stop Private Garbage Collection.

Grand Rapids, Mich.—In the case of the board of health against one Vink, charged with violating the garbage ordinance, a decision was given by Superior Judge Stuart. The decision permanently restrains Vink from acting as a scavenger in Grand Rapids and enjoins him from removing garbage. The case is the outgrowth of several arrests which were made of individuals who privately collected garbage.

### Dumping Causes Flood.

Bingham, Utah—Bingham had its taste of a flood when mattresses, bed springs, timbers and other flotsam and jetsam from Copperfield formed a dam just under the Rio Grande trestle in the Bingham canyon flume, causing the waters to rise from their accustomed course and run through the town. J. A. North, road superintendent, and William Robbins, water master of Bingham, hurriedly organized a posse to fight the torrent. They rapidly constructed a barricade to repulse the onrushing water and after an hour's attack finally drove it to the creek bed. Two hours later, the water reinforced by a heavy down-pour of rain, again immersed Bingham. A request will be sent to the authorities in Copperfield to prohibit the throwing of refuse into the waters of the creek to prevent any similar accident occurring.

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## RAPID TRANSIT

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### Trackless Trolley in Pennsylvania.

Harrisburg, Pa.—The Perkiomen Electric Transit Company has applied for a certificate of public convenience from the Public Service Commission, which will permit the company to be registered for business in this state. The company is a Delaware corporation with a capital of \$25,000. It proposes, at the start, to build a 40-mile trackless trolley bus line along the public highway from Phoenixville to Emaus, and claims to have obtained some of the franchises already. No such transportation system exists in this state, and few, if any, in the United States. They are said to have been quite successful abroad. A trolley is erected along the road and the rubber-tired busses run along the highway like an automobile or horse-drawn vehicle. The real backers of the proposed enterprise are not known.

### Progress of New York Subways.

New York, N. Y.—According to the progress reports made by the Division Engineers to Alfred Craven, Chief Engineer of the Public Service Commission for the First District, there are now about 17,000 men engaged in construction work on the Dual System subway and elevated railroad contracts. Of this total about 14,000 are employed by contractors building the lines to be owned by the city and about 3,000 by contractors building the elevated extensions and additions to be owned by the companies. The Dual System is divided by the commission into 83 contract sections. Contracts have been awarded for 59 of these sections, leaving only 24 yet to be made. All together, the City of New York has now outstanding contracts for Dual System construction on city-owned lines aggregating \$140,516,185.38, of which \$69,462,918.84 is on lines for operation by the Interborough Rapid Transit Company and \$71,073,466.54 on the New York Municipal lines. A portion of the total in each case will be paid for by the companies out of the contributions made by them toward the construction of city-owned lines, namely, \$58,000,000 by the Interborough and \$13,500,000 by the New York Municipal. Roughly speaking, the Dual System agreements call for the construction of about 80 miles of new subway and elevated roads on city-owned lines, with about 260 miles of single track. The contracts already let cover about 50 miles of the total road mileage.

### Votes to Construct Railway.

Roseburg, Ore.—By a majority of more than 3 to 1 the voters of Roseburg authorized issuance of bonds in the sum of \$55,000 with which to assist in the construction of a railroad between Roseburg and Coos Bay. Concurrent with voting the bonds the voters elected a railroad commission composed of ten prominent business men of the city to handle the project.

### Limits Municipal Railroads.

Olympia, Wash.—Scott Z. Henderson, assistant attorney-general, rules that municipalities cannot own, buy or operate railways, outside of municipal corporation limits, and that a tax cannot be levied for the maintenance and operation of such systems when they are outside of the city limits, in an opinion to the state bureau of inspection. The line affected is the Lake Burien line, which is now a part of the Seattle municipally owned street railway system.

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## MISCELLANEOUS

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### Bread in Chicago's Municipal Market.

Chicago, Ill.—Three loaves of bread for five cents are being offered at Chicago's municipal market to attract buyers. Free samples of different foods are also served. Reasons for the reluctance of farmers to bring their product to the new municipal market, a situation which seriously threatens the success of the experiment, were made public by members of the market committee, who have been interviewing farmers. Some farmers said it was too late in the season to change from former practices, others declared they could not afford to spend the day in the market disposing of their produce at retail, when commission merchants would buy by the wagon load. Still others said that housewives were too particular and would buy only the best, while commission merchants take good and inferior alike.

### City Terminal for Food.

New York, N. Y.—Lindon Bates, Jr., a member of the Western Society of Engineers and the Société Belge des Ingenieurs et des Industriels, has put before the Board of Estimate a plan for a west side foodstuffs terminal to be built at the foot of West Fifty-ninth street, where, Mr. Bates declares, "rail and water lines meet." The scheme for the terminal has been indorsed, in a petition to the Board of Estimate, by many merchants. The plan is a modification of the new city market policy. Its object is to eliminate the present large cost of unscientific terminal handling and the extortionate rates at present exacted, and

so to afford retail merchants an opportunity for purchasing and selling foodstuffs at the lowest prices. According to the report of the Department of Docks and Ferries is conclusive as to the reduction possible along this line. The loss of money due to delays caused by the congestion on piers, bulkheads, etc., with present methods is enormous. A reduction in cost of handling after reaching the pier of only two cents per ton would result in an annual saving of \$500,000 on the foreign commerce alone.

Borough President Marks and Ralph Folks, Secretary of the borough, have returned from Philadelphia and Baltimore, where they went to inspect markets. Mr. Marks said that his trip had given him ideas for the betterment of the recently established free markets in Manhattan. He is going to try and persuade the street railroads to establish freight terminals. He is convinced that these would be of benefit to the people and a source of revenue to the railroads. The freight service would be active in the early morning hours when there is little passenger traffic, he said. The freight terminals of the street railroads in Philadelphia especially impressed Mr. Marks.

### St. Louis Municipal Movies.

St. Louis, Mo.—The municipal moving picture shows which made the rounds of the parks during the summer months were an unqualified success. In 14 parks 56 entertainments were given with the appropriation of \$2,000. The educational films made the greatest appeal to the crowds which attended the shows in greater numbers than the band concerts. It is now planned to carry through a small appropriation to continue the shows in the school buildings during the winter.

### New Municipal Building for Dallas.

Dallas, Tex.—Dallas' new city hall is completed and will shortly be opened by Mayor W. M. Holland and the Board of City Commissioners. The cost will be \$540,000. The style of the building as designed by C. D. Hill & Co., architects, is after the Corinthian order with a feeling of modified French renaissance. The main base is of light Texas gray granite and the entire entablature of glazed terra cotta. The building has a depth of 90 feet and a frontage of 176 feet and consists of four stories, basement and sub-basement. In the latter, besides storage room and utility plants is a shooting range for the police department. In main basement is an emergency hospital and free dispensary, and the offices of the police department and fire marshal. The corporation court, city electrician's office and laboratory, and city garage are also located on this floor. The tax, sanitary, water and building inspection departments are on the main or first floor. On the second are the offices of the mayor and commissioners and the council chamber. The engineering department is on the third floor where there is also the auditorium, which will hold 1,100 people. The building is equipped with elevators, vacuum steam system, refrigerating plant, fountains and numerous other modern conveniences.

### Begin Work on Jacksonville Dock.

Jacksonville, Fla.—Construction work on Jacksonville's municipal docks has started, the first piling having been driven by the contractors. Within three months it is believed that the pile-driving work will be all completed for the two 1,000-foot piers which will be constructed as planned. The piling is what is known as Lackawanna arch sheet piling. The strips are fourteen inches wide and are of an interlocking sort when driven down. Above the water steel rods are also used in reinforcing the same. The sheets go deep into the clay which is characteristic of the river bottom formation at the municipal dock site. The work now under way means the construction of two piers 1,000 feet long and 260 feet in width. The slips will be of the same width as the piers. It is estimated that in dredging sand, fully 1,000,000 yards in amount will be pumped in behind the piling. When this part of the municipal dock system is complete it will give accommodation at one time to between ten and fifteen ships of the usual ocean-going sort. This work will be completed, it is thought, before the construction of the connecting belt railway is started.



## LEGAL NEWS

### A Summary and Notes of Recent Decisions— Rulings of Interest to Municipalities

#### Disposition of Property—Powers of Municipality.

*Palmer v. City of Albuquerque et al.*—Municipal corporations possess the incidental or implied right to alienate or dispose of the property, real or personal, of the corporation of a private nature, unless restrained by charter or statute; they cannot, of course, dispose of property of a public nature, in violation of the trusts upon which it is held.—Supreme Court of Mexico, 142 P. R. 929.

#### Mode of Public Improvement.

*Hochfield et al. v. City of Portland.*—Portland city charter, giving the council authority to levy a two mill tax which shall constitute a special fund to be used only to pay for the construction of bridges other than those across the Willamette River, the estimated cost of which shall not be less than \$15,000 each, but declaring that these provisions do not include elevated roadways, tramways, or structures other than bridges across gulches and ravines, does not restrict the city to the erection of a bridge as the manner of improving a street at any particular place.—Supreme Court of Oregon, 142 P. R. 824.

#### Police Three Platoon Law—Obeying Superior.

*People ex rel. MacNish v. Waldo, Police Commission.*—Under the Three Platoon Law, section 1, providing for the division of the sergeants, roundsmen, and patrolmen into three platoons, and that no one of them, nor any member thereof, shall be assigned to more than one tour of duty, such tour not to exceed 8 hours of each successive 24 hours, nor more than 8 hours of reserve duty of each consecutive 72 hours, and section 3 providing that policemen, "while on reserve duty, as mentioned in the first section," shall not be required to render any service, except in case of an emergency, and shall be free to retire for sleep "during reserve duty in their station house," a policeman is not relieved of duty, when not on his tour of reserve duty, as so defined, to obey an order of his superior, as to one to drill, pursuant to a requirement of the department for drill for an hour seven times a year.—Court of Appeal of N. Y., 106 N. E. R. 116.

#### Street Railway Franchise—Fares.

*Raynor v. New York & L. I. Traction Co.*—Where two street railway lines forming a continuous line, operated, one under a municipal franchise given in 1901, the other under a municipal franchise given in 1903, by both of which franchises it was provided that the railway company should issue and receive transfers to and from any connecting line or lines, and that the fares should be divided between the connecting companies, the two lines were "connecting lines," though the franchises were given to one company.—Nassau County Court, 149 N. Y. R. 151.

#### Police Pension Fund—Oakland Charter—Construction.

*Mackey et al. v. Molt et al.*—Oakland City Charter (St. 1911, pp. 1608, 1609) §§ 94, 95, provide for pension of aged, infirm, and disabled members of the police force, and section 96, subd. 1, provides relief for the family of an officer killed in the performance of duty, and declares: (a) That should he be married, the amount shall be paid to his widow so long as she remains single; and (b) if the officer left no widow, but left an orphan child or children under 16 years, or the widow die without marrying while the child or children were under 16, they should receive the pension; and (c) that if there was no widow or orphan child or children, parents dependent solely on the decedent for support should receive the pension during the time of necessity. Held, that sections 94 and 95 did not exclude the members of the family of an officer who had been retired and was receiving a pension at the time of his death from benefits under section 96, subd. 2, nor limit the benefits of the latter section to relatives of officers who had never received a pension.—District Court of Appeals, First District, California, 142 P. R. 1082.

#### Municipal Corporations—Fire Limits—Application of Ordinances.

*Russell v. City of Fargo.*—When fire limits are established in a city, within which buildings of certain classes may not be erected, a different rule relating to the powers of the city applies to buildings of such classes erected prior to the establishment of the fire limits than applies to those subsequently erected.—Supreme Court, North Dakota, 148 N. W. R., 610.

#### Contract to Purchase Waterworks—Water Companies—Books and Papers—Inspection by Town.

*Mayor and Council of Town of Boonton v. United Water Supply Co.*—Where a contract by a water company to supply water to the inhabitants of a town provided that the town might purchase the works and "at any and all times" might inspect the books and vouchers of the company, the town was entitled to exercise such right of inspection, though it did not exercise its option to purchase; nor was it a valid objection that the inspection privilege was not mutual.—Court of Chancery of New Jersey, 91 A. R. 814.

#### Taking Land for Public Use—Damage.

*Kamper v. City of Chicago.*—Where a city constructed a water tunnel across complainant's property 70 feet below the surface as part of a city system for taking water from Lake Michigan and supplying it for pay to its inhabitants, complainant was not entitled to maintain a suit to compel the city to remove the tunnel and restore his lots to their former condition, though the city had not condemned the right to maintain the tunnel, but, the city's work being of a public character and the land having been appropriated to a public use, complainant was limited to his right to recover damages.—Circuit Court of Appeals, Seventh Circuit, 215 F. R. 705.

#### Improvement District—Ordinance of Intention—Sufficiency of Description.

*Coughanour v. City of Payette.*—Under the provisions of section 2338, Rev. Codes, as amended by Sess. Laws 1911, p. 268, c. 81, where the resolution or ordinance of intention describes the exterior boundaries of an improvement district proposed to be established, and also contains the number of the lots and blocks within such district that will be affected by such improvement, it is a sufficient compliance with the statute, since the streets and alleys can be readily ascertained and determined from said description.—Supreme Court of Idaho, 142 P. R. 1076.

#### Street Crossing—Duty to Maintain.

*St. Louis, I. M. & S. Ry. Co. v. O'Connor.*—Although a public street crossing defendant's right of way may never have been opened and dedicated to, and accepted by, the public as a public highway, yet if it has been used continuously by the public for several years, recognized and treated as a public crossing by defendant, it will be presumed to be such; and the railroad company owes it to the public to maintain its right of way and property adjoining said crossing in a reasonably safe condition, and to use ordinary care to prevent injury to persons using the same.—Supreme Court of Oklahoma, 142 P. R. 1,111.

#### Fire Commissioners—Orders—Installation of Extinguishers.

*Kane v. New York City.*—Greater New York Charter (Laws 1897, c. 378) c. 15, tit. 3, § 762, as continued by Laws 1901, c. 466, provided that owners and proprietors of certain buildings shall provide such means of communicating alarms of fire, accident, or danger, to the police and fire departments, as the fire commissioner or police board may direct, and shall also provide fire hose, fire extinguishers, buckets, axes, fire hooks, fire doors, "and other means of preventing and extinguishing fires as said fire commissioner may direct." Section 773 of the same title makes it a misdemeanor not to obey such direction. Held, that the means particularly specified were not exclusive, and that the words quoted were not to be construed according to the rule *eiusdem generis* as limited to things of the same kind as those specified for extinguishing fires, but that the commissioner was authorized thereby to order the installation of a sprinkler system, where the circumstances made such requirement a reasonable one.—Court of Appeals of New York, 106 N. E. R. 122.

## NEWS OF THE SOCIETIES

### Calendar of Meetings.

Oct. 20-23.  
**INTERNATIONAL ASSOCIATION OF FIRE ENGINEERS.**—Annual Convention, Grunewald Hotel, New Orleans, La. Secretary, Mr. McFall, Roanoke, Va.  
 Oct. 21-23.  
**ALABAMA GOOD ROADS ASSOCIATION.**—Nineteenth Annual Convention, Montgomery, Ala. Secretary, J. A. Rountree, 1021 Brown Marx Bldg., Birmingham, Ala.  
 OCT. 21-23.  
**PENNSYLVANIA WATER WORKS ASSOCIATION.**—Annual Convention, Haddon Hall, Atlantic City, N. J.  
 Oct. 28-31.  
**NORTHWESTERN ROAD CONGRESS.**—Annual Convention, Milwaukee, Wis. Secretary, J. P. Keenan, Milwaukee.  
 Nov. 9-10.  
**VIRGINIA LEAGUE OF MUNICIPALITIES.**—Annual Convention, Norfolk, Va. Col. W. H. Sargeant, Jr., President.  
 Nov. 9-13.  
**FOURTH AMERICAN ROAD CONGRESS.**—American Highway Assoc. and American Automobile Assoc., Atlanta, Ga. Secretary, J. S. Pennybacker, Colorado Building, Washington, D. C.  
 NOV. 12-14.  
**CONFERENCE OF AMERICAN MAYORS.**—Bellevue-Stratford Hotel, Philadelphia, Pa.  
 Nov. 16 and 17.  
**MONTANA MUNICIPALITIES.**—Third Annual Meeting held at Billings, Mont. Robert Leavens, Mayor of Billings.  
 Nov. 17-21.  
**NATIONAL MUNICIPAL LEAGUE.**—Annual Convention, Baltimore, Md. Secretary, Clinton Rogers Woodruff, North American Building, Philadelphia, Pa.  
 Nov. 18-20.  
**WASHINGTON STATE GOOD ROADS ASSOCIATION.**—Spokane, Wash. Secretary, M. D. Lechey, Alaska Building, Seattle, Wash.  
 NOV. 23-28.  
**EXHIBITION OF STREET CLEANING APPLIANCES.**—Department of Street Cleaning, City of New York. J. T. Fetherston, Commissioner of Street Cleaning.  
 Nov. 30-Dec. 6.  
**AMERICAN PUBLIC HEALTH ASSOCIATION.**—Forty-second Annual Convention, Jacksonville, Fla. Dr. C. E. Terry, Chm., Executive Committee.  
 Dec. 2, 3, 4.  
**CITY MANAGERS' CONVENTION.**—Springfield, Ohio. C. E. Ashburner, City Mgr., Springfield.  
 Dec. 14-18.  
**AMERICAN ROAD BUILDERS' ASSOCIATION.**—11th Annual Convention; 5th Annual Good Roads Congress, and 6th Annual Exhibition of Machinery and Materials, International Amphitheatre, Chicago, Ill. Secretary, E. L. Powers, 150 Nassau st., New York, N. Y.  
 Feb. 10-17, 1915.  
**EIGHTH CHICAGO CEMENT SHOW.**—Coliseum, Chicago, Ill. Cement Products Exhibition Co., J. P. Beck, General Manager, 208 S. La Salle Street, Chicago, Ill.

### FOURTH AMERICAN ROAD CONGRESS.

Final arrangements for the Fourth American Road Congress, to meet in Atlanta, Georgia, during the week of November 9-14, are nearing completion. All indications point to a record-breaking attendance and exceptionally strong program, while the demand for exhibit space on the part of manufacturers will far exceed the supply of space available.

#### Program.

The program carries the names of twenty-five official heads of highway departments of the national and state governments, who will present every phase of construction, maintenance and administration. Federal aid to road improvement will be ably discussed by United States Senators Hoke Smith, John H. Bankhead, and by Representatives D. W. Shackelford and Wm. P. Borland. Judge Shackelford is Chair-

man of the Committee on Roads of the U. S. House of Representatives, and Representative Borland is noted for his eloquent championship of a national good roads policy. The executive branch of the Federal Government will be ably represented by a number of prominent officials and it is hoped that President Wilson himself will attend. If he does not, it is practically assured that a member of his cabinet will address the Congress. The military arm of the service will have a place on the program, as Brig. Gen. Wm. T. Rossell, former Chief of Corps of Engineers, U. S. A., and Maj. Amos A. Fries, Corps of Engineers, will take part in the proceedings. Logan Waller Page, Director of the U. S. Office of Public Roads, and President of the American Highway Association; John A. McIlhenny, President of the U. S. Civil Service Commission, will be prominent figures at the sessions of the Congress. The American Bar Association will officially take part in the session of the Congress devoted to Road Legislation, and will be represented by a special committee of which Frederick D. Wadhams is Chairman. The American Bankers' Association will have a committee to cooperate in the holding of a Finance Session, at which Wm. G. Edens will preside. It is expected that Hon. John L. Hamilton, former President of the American Bankers' Association will be one of the speakers. The National Civil Service Reform League will hold a session devoted to a discussion of the Merit System in Road Administration, and at this session Richard Henry Dana, President of the League, will preside. It is expected that John H. Fahey, President of the Chamber of Commerce of the United States, will be one of the speakers of this session. Fairfax Harrison, President of the Southern Railway, will be one of the speakers of the Congress, and will emphasize the importance of the relationship between the railroad and the public road. Highway engineering in schools and colleges will be given attention through addresses by Hector J. Hughes, Professor of Engineering, Harvard University; Prof. C. M. Strahan, Dean of Engineering, University of Georgia; Prof. R. D. Kneale from the Department of Engineering of the Georgia School of Technology; Prof. E. J. McCaustland from the University of Missouri and other prominent educators. "Road Building Yesterday, Today and To-morrow" will form the subject of an address by James H. MacDonald, former highway commissioner of Connecticut, and one of the pioneers of modern road building. W. E. McClintock, former Chairman of the Massachusetts Highway Commission, another of the pioneer road builders who has seen this important work develop into a nation-wide activity, will attend the Congress.

The Construction and Maintenance

Program as now made up is as follows:

Drainage Structures, by W. F. Atkinson, State Highway Engineer of Louisiana. Discussion opened by S. D. Foster, Chief Engineer, State Highway Department of Pennsylvania.

System in Road Management, by C. J. Bennett, Highway Commissioner of Connecticut. Discussion opened by Paul D. Sargent, State Highway Engineer of Maine.

Maintenance Methods and Relation to Traffic, by George W. Cooley, State Engineer of Minnesota. Discussion opened by H. R. Carter, State Highway Engineer of Arkansas.

Convict Labor, by George P. Coleman, State Highway Commissioner of Virginia. Discussion opened by J. E. Maloney, State Engineer of Colorado.

Rights of Way, by Austin B. Fletcher, Highway Engineer of California. Discussion opened by W. S. Gearhart, State Engineer of Kansas.

Surfaces for Light Volume Mixed Traffic, by S. Percy Hooker, State Superintendent of Highways of New Hampshire. Discussion opened by Frank F. Rogers, State Highway Commissioner of Michigan.

Efficiency in Highway Organization, Centralization of Purchases, by E. A. Stevens, State Highway Commissioner of New Jersey. Discussion opened by John S. Gillespie, Road Commissioner of Allegheny County, Pennsylvania.

State Control of Road Work as a Policy, by A. N. Johnson, former State Highway Engineer of Illinois. Discussion opened by T. H. MacDonald, State Highway Engineer of Iowa.

Engineering Supervision of Road Construction, by W. S. Keller, State Highway Engineer of Alabama. Discussion opened by R. C. Terrell, State Highway Commissioner of Kentucky.

Economics, by J. E. Pennybacker, Chief, Division of Economics U. S. Office of Public Roads.

Educational Field for Highway Departments, by Dr. Jos. Hyde Pratt, State Geologist of North Carolina. Discussion opened by Col. Sidney Suggs, State Highway Commissioner of Oklahoma.

Heavy Traffic Roads, by Henry G. Shirley, Chief Engineer, State Roads Commission of Maryland. Discussion opened by W. A. Hansell, Superintendent of Public Roads, Fulton County, Georgia.

Grades and Excavation, by A. D. Williams, Chief Road Engineer of West Virginia. Discussion opened by Wm. R. Roy, State Highway Commissioner of Washington.

Problems of Street Construction and Maintenance, by Charles E. Bolling, City Engineer, Richmond, Virginia. Discussion opened by F. L. Ford, City Engineer, New Haven, Conn.

Road Binders and Palliatives, by Chief Engineer Rhode Island State Roads Commission. Discussion opened by Chas. W. Campbell, City Engineer, St. Joseph, Mo.

Possible Lines of Improvement in Contract Highway Work, by John J. Ryan, Secretary, New York State Road



Builders' Association. Discussion opened by L. D. Smoot, City Engineer, Jacksonville, Fla.

#### Exposition.

The elaborate exhibit of the U. S. Office of Public Roads, which is being prepared for the Panama-Pacific Exposition, will be shown intact at the Road Congress and will include not only exact models of every known type of road, and the historical development of road building from the earliest times, but will also comprise special models showing road location, the beautifying of the roadside, and mountain road construction as exemplified in the splendid Swiss roads. The New York State exhibit will include at least one example of model work, which it is claimed will prove one of the most impressive exhibits at the Congress. A number of other states will have interesting exhibits in the form of models, maps and materials. The exhibits will be located in the auditorium, a huge structure belonging to the city of Atlanta and designed specially for meetings and exhibit purposes. Taft Hall, in which the sessions of the Congress will be held, is in the auditorium, so that the visitors and delegates may inspect the exhibits and attend the meetings without the inconvenience of going from one building to the other. All available space in the auditorium for commercial exhibits has been taken, as well as the entire area of Gilmer street, for a distance of one city block. A temporary structure with wooden roofing and canvas sides will be erected to protect all of the exhibits on Gilmer street, and will be so arranged so as to make it a continuous structure with the auditorium. A viaduct extending from Gilmer street, a distance of two blocks, has been obtained for the exhibit of heavy machinery in operation, and already 70 per cent. of this space has also been taken. All indications point to an exposition of road machinery, materials and engineering instruments, which will surpass all records in magnitude. All possible arrangements are being made for the comfort and convenience of the exhibitors, such as special telegraph and telephone offices, stenographic and typewriting facilities, efficient janitor service and police and fire protection. A special feature of interest to exhibitors will be a moving picture room, which the management of the Congress provides without cost, including moving picture machine and operator for the use of the exhibitors.

#### Railroad Rates and Special Trains.

A rate of 1½c. per mile, which is the lowest railroad rate granted to any convention, has been obtained from the Southeastern Passenger Association, which embraces the territory south of the Potomac and east of the Mississippi rivers. In the eastern Trunk Line territory and in the Western Passenger Association territory the rate will be 2c. per mile. A number of special trains will be operated for the benefit of delegates and visitors. One of the specials will leave New York at 4.35 p. m. November 7, arriving at

Atlanta at 4.50 p. m. November 8. This special will make stops at West Philadelphia, Baltimore, Washington, Danville and Charlotte, and will connect for passengers from Richmond and Norfolk. Another special will leave Chicago on the evening of November 7, and will pass through Indianapolis, Cincinnati and Chattanooga en route to Atlanta. Special service is also being arranged from Austin and Galveston, Texas, and other southwestern points. Many of the visitors to the Congress will make the trip by automobile, this being made possible by the marked improvement in southern roads during the past few years. The cooperative arrangement, made by the American Highway Association with the U. S. Office of Public Roads, and county authorities in March of this year, for a maintenance object lesson on the road between Washington and Atlanta has produced excellent results, and it is believed that comparatively smooth going will be encountered by visitors from the north. The members of the State Board of Public Roads of Rhode Island, have already planned a trip to the Congress by automobile.

#### Social Features.

On the evening of the opening day, Governor and Mrs. Slayton will give a brilliant reception to the delegates and visitors at the State Capitol. On Tuesday evening the annual Road Congress Banquet will be given at the Kimball Hotel. On Wednesday afternoon from 4 to 6 o'clock a tea will be given in honor of the visiting ladies, at the Georgian Terrace Hotel. On Thursday evening it is planned to have an organ recital and musical at the auditorium, in which a trained chorus of two hundred and fifty voices will be a feature. Atlanta is planning to give a welcome of such warmth and wholeheartedness, as will cause the event to live long in the memories of the visitors.

Several of the leading Atlanta hotels have already been booked to their capacity, and it is suggested that all persons contemplating a visit to the Congress should make reservations without delay. Information may be obtained concerning hotels from Fred Houser, Secretary, Convention Bureau, Atlanta, Ga. Information about the program and the Congress in general, may be obtained from I. S. Pennybacker, Executive Secretary, Colorado Building, Washington, D. C., and concerning exhibits from Charles P. Light, Business Manager, Colorado Building, Washington, D. C. The general officers of the Congress are as follows: Austin B. Fletcher, State Highway Engineer of California, President; Edward M. Bigelow, State Highway Commissioner of Pennsylvania Vice-President; W. E. Atkinson, State Highway Engineer of Louisiana, 2nd Vice-President; A. N. Johnson, former State Highway Engineer of Illinois, 3rd Vice-President; C. A. Magrath, Chairman, Ontario, Canada, Highway Commission, 4th Vice-President; Lee McClung, Treasurer, former Treasurer of the United States; John N. Carlisle, State Com-

missioner of Highways of New York, Chairman, Committee of Program; the executive committee comprises in addition to President Fletcher, George C. Diehl, Chairman, Good Roads Board, American Automobile Association, Chairman; Logan Waller Page, President, American Highway Association and Director, U. S. Office of Public Roads; Richard H. Edmonds, Editor of the Manufacturers Record, and A. G. Batchelder, Chairman, Executive Committee, American Automobile Association.

#### Southern Appalachian Good Roads Association.

With the largest attendance yet recorded at any meeting of the convention, the Southern Appalachian Good Roads Association held its sixth annual convention at Bristol, Va., Oct. 6-9.

At the opening of the convention a message from President Wilson was read. This was followed by prayer by the Rev. Adolph Kistler, of the Central Presbyterian Church. Brief addresses of welcome were delivered by the following: Mayor George M. Warren, for Bristol, Va.; John H. Caldwell, for Bristol, Tenn.; Carl A. Jones, for the Bristol Board of Trade; C. B. Scott, of Richmond, for Virginia, and former Governor John I. Cox, for Tennessee. Brief responses were made by Dr. Joseph Hyde Pratt, on behalf of the association; C. C. Gilbert, of Nashville, on behalf of motor parties from Middle and West Tennessee; Lee F. Miller, on behalf of motor parties from East Tennessee; W. L. Lee, of Princeton, for West Virginia; Robert C. Terrell, for Kentucky; W. G. Sirrine, for South Carolina; Prof. C. M. Strahn, for Georgia.

The night session was concluded with the reports of the officers and the appointment of committees.

The addresses on Wednesday, Oct. 7, were:

"Road Maintenance"—W. W. Crosby, civil engineer, Baltimore.

"Value of a State Highway Commission"—Hon. G. P. Coleman, State Highway Commissioner of Virginia.

Address—A. D. Williams, Chief Road Engineer, West Virginia.

"Co-operative Road Building"—H. G. Peters, of Bristol.

"Bridge Building"—Prof. S. P. Slack, University of Georgia.

"Where to Build Roads and What to Do with Them After They Are Built"—Hon. George E. Cassel, publicity agent, Norfolk & Western Railway Company.

A feature of the convention was the moving picture films showing interesting road views and points of scenic charm in Western North Carolina. These were shown every evening.

The program for Thursday included:

"Co-operative Road Building"—H. G. Peters, of Bristol.

"Road Building in the Appalachian Parks"—Hon. Sam R. Sells, of Tennessee.

Address—Hon. R. Tate Irvine, of Virginia.

(Continued on page 612.)

## NEW APPLIANCES

### WATER EMERGENCY TRUCK.

#### White Truck for Closing Gate Valves.

Bursting water mains are not so great a menace to life and property in the city of Boston since the water department installed a White truck with a power appliance for quickly closing the heavy gates. Work which formerly required four men, laboring continuously for 45 minutes, can be done in ten minutes by using the power of the truck. This mechanical device, an invention of George H. Finneran, superintendent of the distribution branch of the water department, not only conserves the water supply and reduces the damage due to breaks, but it permits of rapid regulation of water volume at fires and facilitates the testing of gates and relieves the anxiety always attending derangement or damage to the water system. In one of Boston's most important thoroughfares, lined with costly buildings, there is a water main which if completely broken apart, would allow the escape of 50,000 gallons of water each minute. Controlling this line are gate valves 36 inches in diameter which, in closing, require 307 turns of a gate wrench and services of four men for about 45 minutes. A few minutes' delay sometimes means the loss of life and thousands of dollars. These gates, the largest in the city, can now be closed in ten minutes by one man and the White truck. The truck is required to respond to fire alarms and other emergencies where water must be controlled to prevent loss or damage. The calls are frequently overlapping. Crews are on duty day and night. Boston being 15 miles in greatest length and 9 miles wide, the runs vary from one block to the farthest end of the water system.

Under the old scheme, when several gates had to be closed, the few men available at night were almost exhausted before shutting the last gate. By its ability to work continuously the truck has relieved the fear of being unable to cope with any emergency.

The gate-closing device consists of a universal wrench socket with a worm gear enclosed in an aluminum housing and mounted on the running-board of the truck so that it can be easily brought into position immediately over a water-gate manhole. When the truck is in position a wrench is slipped through the socket. This wrench fits the nut on the gate-gear below. The universal wrench socket, together with a universal joint on the end of the wrench, affords sufficient flexibility in case the truck is not on level ground or in case the wrench socket is not directly over the gate nut. It is an easy matter, however, for the driver to bring his truck into the exact position. The worm gear is driven off the regular transmission of the truck. The device is operated by a lever placed upon the side of the truck and easily accessible to the driver. In closing gates the forward speeds of the transmission are used. In opening the reverse is used. All gears are made of chrome or nickel steel. All bearings are ball bearings. The aluminum housing is firmly bolted to the frame of the chassis and well braced to resist torque. The wrench is a hollow square steel tube terminating in a specially hardened steel socket with universal joint between socket and tube. The gates are equipped with indicators showing the position of the valve and informing the operator when the valve is seated or entirely opened. Where indicators have not been attached to the gates, a counter is used.

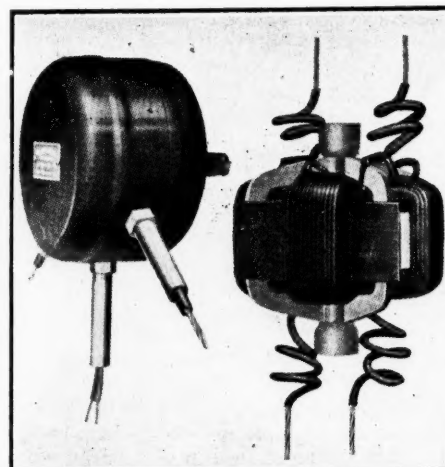
This counter is placed on the end of the wrench recording the number of its revolutions. This helps the operator to determine when the valve is entirely up or down. As a means of safety in the event of the valve seating with force or before the operator expected, a pin of known strength, placed in the universal joint of the wrench, breaks off and breaks the line of force between the engine and the gate, thus preventing damage to either the gate or the gate operating device.

This truck is one of the numerous White trucks used for special purposes and was made by the White Company, Cleveland, O.

### A SERIES-MULTIPLE TRANSFORMER.

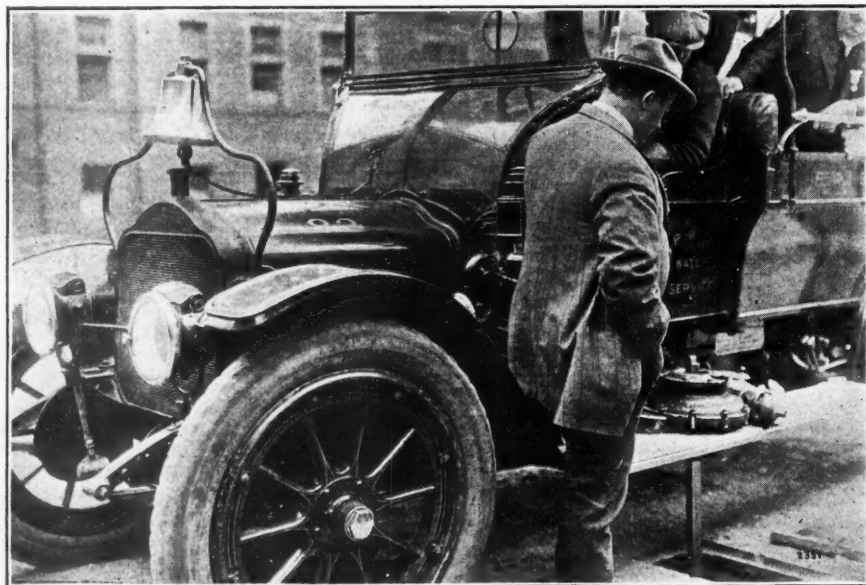
#### For Series Incandescent Street Lighting.

The Kuhlman Series-Multiple Transformer is designed especially for series



LIGHTING TRANSFORMER.

incandescent street lighting and consists essentially of primary windings in series with the constant current circuit and secondary windings connected in multiple to the lamp socket. In this way the lamps are in parallel and each lamp is entirely independent of every other so that no total shut-off would follow an accident to one or any of the lamps. While designed for use in connection with the new nitrogen-filled "Type C" Mazda lamp taking large current at low voltage, these transformers may be used for any type of an incandescent lamp which can be operated in multiple. In post-lighting where the circuit is carried in an underground conduit the transformer is connected into the circuit at the base of the post so that no high voltage conductor enters the post at all and there is only the lamp voltage to consider. Besides rendering the installation safer this transformer is calculated to obviate the necessity of expensive high voltage wires in the post.

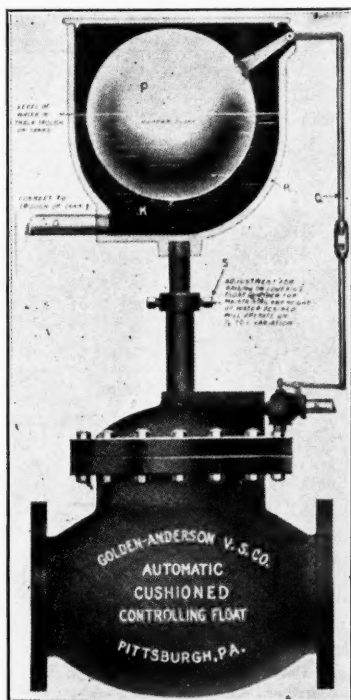


WHITE EMERGENCY TRUCK FOR CLOSING GATE VALVES.



Where it is desired to change an arc lighting system to a nitrogen-filled Mazda lamp system without discarding equipment already in use, compensator coils are furnished with the transformer. These coils can be mounted on the present arc lamp frame and built to take the constant current of any series circuit and deliver the required large current at low voltage. With these coils, in this way, a circuit may be gradually changed, a few lamps a day from the arc to the incandescent system without interruption of the service.

The transformer, as illustrated, is put up in stamped steel case and all ter-



AUTOMATIC FLOAT VALVE.

minals are brought out so that connections can be made to lead covered cable by means of a wiped joint. These transformers are made by the Kuhlman Electric Company, Elkhart, Ind., and come in sizes for 200, 300, 500 750 and 1,000 watt-lamps.

#### HEAVY OIL ENGINE.

##### Wygodsky Self-Starting, Self-Cleaning Engine for Low-Grade Fuels.

Although the Diesel type of oil engine has of late come rapidly to the front, using as it does the cheapest grades of fuel oils and being therefore capable of lowest costs in fuel per h.p. delivered, it is, however, rather complicated in construction and operation. It is heavily built to withstand the high compressions it uses and has auxiliaries such as air compressors. The semi-Diesel type works at much lower compression, but has a vaporizer that requires preheating for starting, and while the engine is running the vaporizer remains red hot, which is objectionable in an engine room where oil and water are always to be found. The Wygodsky Heavy Oil Engine is a hori-

zontal, four-cycle engine, for heavy duty purposes. The designer has combined many desirable features of European and American practice, and, in addition, there are many new and novel features. Of these two of the principal are the self-starting feature and the complete elimination of storing of compressed air. Using a compression of not over 200 lbs. has enabled the building of the Wygodsky engine in structures of lower weight than other oil engines of equal h.p.

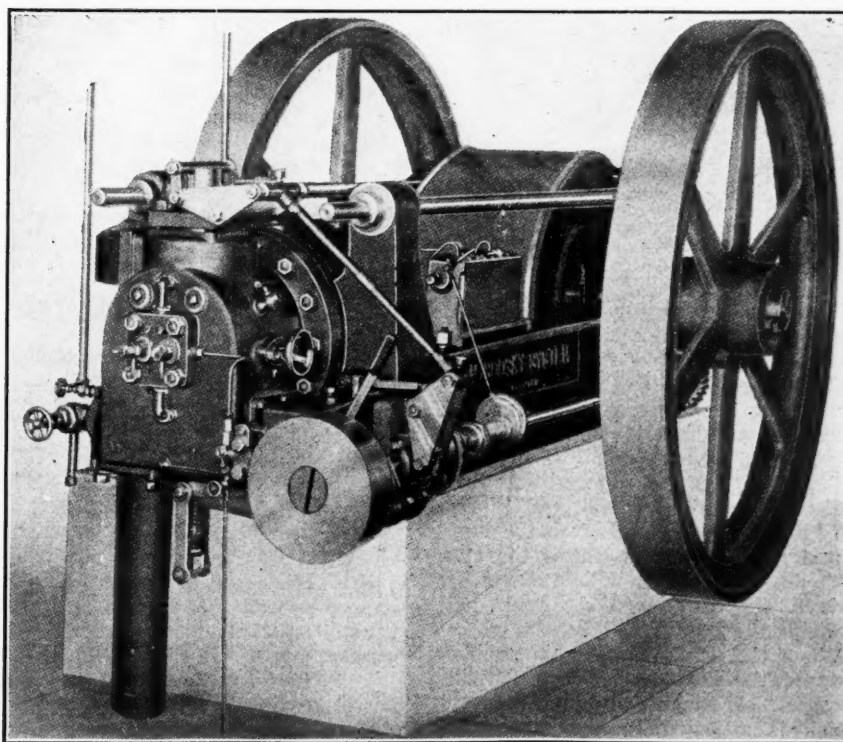
The engine bed is different from the ordinary design, being braced by steel tie rods which give the engine strength notwithstanding its reduced weight. The same tie rods serve as rails for a small device which acts as a traveling crane and thus permits one man to take off or replace any heavy part of the engine, such as cylinder head or piston, or to lift the crankshaft with the flywheels in case the main bearings require repairs or renewal after long service. Such parts of the engine as may require renewal, such as the cylinder head, etc., do not carry any part of the mechanism, and in case replacement is required it does not involve the necessity of refitting the whole mechanism. A separate liner permits of free expansion without setting up stresses due to different temperatures. The whole mechanism of the engine is assembled on one bracket which can be replaced in case of accident with all mechanism attached to it. All bearing and wearing surfaces are of large dimensions and provided with efficient lubricating means. The whole lubricating system comes into action as soon as engine starts working. The engine is so designed that every part is made accessible, interchangeable and independent.

In the Wygodsky engine the fuel is

atomized by means of a hydraulically operated sprayer eliminating entirely the necessity for generating or storing compressed air. This simplifies the construction and operation of an oil engine to a very considerable extent. The hydraulic sprayer also does away with necessity of mechanism for operating the valves. No hot bulbs or electricity are used to fire the charge. High compression pressures for ignition are eliminated. The ignition is positive and consists of a hollow ring enclosed within the water-cooled cylinder head and which does not expose any heated surfaces to the outside. It requires only about 1½ minutes to bring this igniting device to the ignition temperature by means of a torch operated by the same fuel the engine uses. This device is for starting only, for as soon as the engine has made a few revolutions the heat of the piston head, plus heat of compressed air in cylinder, is quite sufficient to ignite the finely sprayed oil. The governor is so arranged that if for some reason the engine is reversed the fuel is automatically cut off.

The Wygodsky engine is self-cleaning, due to a device whereby the engine cleanses itself at every working stroke. This device also performs a variety of additional important functions. The self-starting feature of the Wygodsky engine is very useful, as this is accomplished without storing of compressed air or auxiliary appliances. This engine is designed to burn any liquid fuel. Tests show the following results:

Load factor	B.H.P. average	Consumption lbs. per B.H.P.
¼	16.64	.647
½	32.07	.499
¾	47.8	.433
Full	61.8	.494



WYGODSKY HEAVY OIL ENGINE.

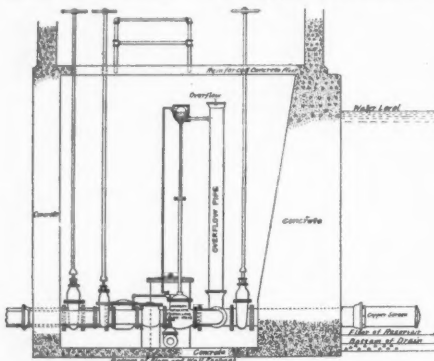
The engine tested was 60 h.p. Fuel used Solar Oil (32° gravity); consumption no load 5.1 lbs. per hour.

The advantages claimed, therefore, for the Wygodsky engine are its relative light weight, and simplicity of design and construction, which not only enables a low cost to the purchaser, but also low cost of operation, requiring no attendance except to start and stop the engine. The engine, which is shown in the accompanying illustration, is made by the Wygodsky Engine Co., Inc., 115 Broadway, New York City.

## WATER CONTROLLING DEVICES

### Automatic Float Valves.

The Golden-Anderson Automatic Angle or straightway controlling float valve is a self-contained valve specially adapted for waterworks gate chambers. These valves eliminate the use of large floats and tanks. The upper portion of



INSTALLATION OF FLOAT VALVE.

the body is lined with bronze and the piston is bronze fitted with rubber cups and discs preventing any metal parts coming in contact. In one type, the valve operating in a vertical position and being cushioned at all times by air and water in opening and closing, positive operation on varying pressures is enforced without chattering or hammering. This type may be placed either above or below the water as desired. The type illustrated here is somewhat different—it will operate on  $\frac{1}{2}$  to  $\frac{3}{4}$  inch variation. The method of installation and operation is seen in the accompanying diagram.

### Electrical Stop and Starter.

The Golden-Anderson electrical stop and starter is a device for automatically maintaining uniform water levels in tanks, standpipes and reservoirs by controlling the pumps. The pressure coming from the tank underneath the diaphragm "A" forces rod "B" upward, tilting cylinder "C," permitting ball "D" to roll to the opposite end, hitting pin "E" which is attached to the horizontal rod "F." This causes the stop "P" on the rod to move lever or switch "G," breaking the contact and stopping the motor.

When the water level in the tank is lowered, the springs "H" force the diaphragm "A" downward. The rod "B" which is attached to the diaphragm plate "I" causes the cylinder "C" to reverse the movement by tilting back, allowing the ball "D" to strike the pin

"J" which is attached to the horizontal rod "F," causing the stop "Q" on the rod to move the lever or switch "G," making the contact with post "K" and starting the motor. The set-screws "LL" shown at each end of the cylinder are for the purpose of securing different variations of water level. The adjusting nuts "OO" above "H" are for obtaining the different heights of water desired in the tank.

Both these devices are manufactured, together with numerous other valves and controlling mechanisms, by the Golden-Anderson Valve Specialty Co., Fulton Bldg., Pittsburgh, Pa.

## INDUSTRIAL NEWS

**Cast-Iron Pipe.**—Chicago—3,250 tons have been bidden on at Cleveland and orders taken for 300 tons at Red Bud, Ill., 200 tons at Evanston, Ill., 150 tons at Rockwell City, Ia., and 100 tons for the South Park Commission at Chicago. Quotations: 4 inch, \$26; 6 to 12 inch, \$24; 16 inch and up, \$23.50. Birmingham Market extremely dull. Quotations: 4 inch, \$20; 6 inch and up, \$18. New York—Lyons has opened bids on 2,123 tons 4, 6, 10 and 12 inch. Quotations: 6 inch, \$20 to \$21.50.

**Lead.**—Quotations: New York, \$3.50; St. Louis, \$3.35.

**The Robeson Process Company,** 18 East 41st street, New York City, and Pennington, N. J., announces that in order to improve and increase its facilities it has combined its laboratories and established an office in a more central location. Shipments will be made from the various warehouses and plants as in the past, but all correspondence, unless especially requested otherwise, should be addressed to the New York office.

## NEWS OF THE SOCIETIES.

(Continued from page 609.)

"The Work of Virginia Road Builders Association"—Hon. W. F. Cocke.

"Landscape Designing as Related to Public Road Building"—Hon. Cyrus Kehr, of Tennessee.

"Convict Labor on Road Construction"—Joseph Hyde Pratt, State Geologist and Highway Engineer of North Carolina.

Address—Prof. C. M. Strahan, University of Georgia.

"Road Construction and Progress in Southwest Virginia"—A. H. Pettigrew.

Reports on special highways:

Asheville - Greenville, Knoxville - Asheville, Atlanta-Murphy-Asheville, Central Highway of North Carolina, Knoxville-Cumberland, Gap-Cincinnati, Knoxville-Atlanta, Hendersonville-Spartanburg, Crest of the Blue Ridge, Bristol-Charlotte, Bristol-Knoxville, Bristol-Memphis, Bristol-Lexington, and Boone Way, Bristol-Coal Fields, Bristol-Bluefield-Pittsburgh, Bristol-Norfolk, Bristol-Washington, Charlotte-Asheville.

Address—Hon. W. S. Keller, State Highway Engineer of Alabama.

Address—Hon. Jesse Taylor, president, Ohio Good Roads Federation.

The association voted to hold its seventh annual meeting in Bluefield, W. Va., next fall. Dr. J. Hyde Pratt, of Chapel Hill, N. C., was re-elected president. The others are:

Henry Roberts, of Bristol, vice-president; C. B. Scott, of Richmond, secretary; state vice-presidents. W. A. Hansell, Georgia; J. N. Fisher, Tennessee; S. H. Webb, North Carolina; E. S. Finey, Virginia; Jas. Maret, Kentucky; E. T. Lipscomb, South Carolina; W. I. Lee, West Virginia.

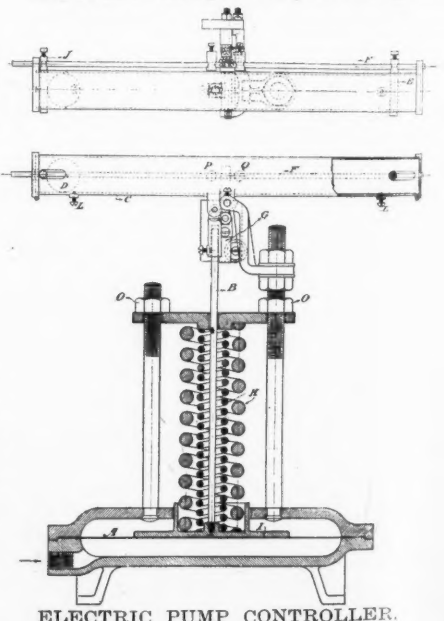
(Continued on page 20.)

## BOOK REVIEWS

### APPLIED CITY GOVERNMENT.

By Herman G. James, J. D., Ph. D., 106 pp. Harper & Brothers, New York. 75 cents.

This volume is really an extension of a pamphlet "A Model Charter for Texas Cities" which received such wide attention from city officials all over the country. The author, who is Professor of Government and Director of the Bureau of Principal Research and Reference at the University of Texas, gives a complete yet simple exposition of the principles of city charter making. He treats the subject logically from the question of incorporation and powers, methods of election, direct legislation facilities, form of government, administrative officers and municipal finances to bonds and franchises. The method is excellent for clarity—the problem is first discussed and the decisions arrived at summarized in actual wording of a city charter. Dr. James believes in all the recent, yet well-established developments in city government, such as commission-city manager form, preferential and short ballot, home rule, initiative, referendum and recall, adequate auditing and indeterminate terms for franchises. These are all incorporated into the charter. To all city officials and especially those who are struggling with the usual unwieldy city charter, this book should prove a practical guide.



ELECTRIC PUMP CONTROLLER.



# ADVANCE CONTRACT NEWS

## ADVANCED INFORMATION BIDS ASKED FOR

## CONTRACTS AWARDED ITEMIZED PRICES

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

### BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
<b>STREETS AND ROADS.</b>				
Ill.	Antioch	2 p.m., Oct.	24..Grading, draining and surfacing road.....	Comrs. of Highway.
O.	Columbus	Noon, Oct.	24..Labor and materials for constructing stone sidewalk....	Council of Village of Linden Heights.
O.	Athens	Noon, Oct.	24..Draining, curbing and paving with brick or blocks.....	B. Davidson, Dir. Pub. Serv.
Pa.	Harrisburg	Noon, Oct.	24..31,000 sq. yds. sheet asphalt, 17,500 lin. ft. 6-in. granite curbing .....	W. H. Lynch, Supt. Sts. & Pub. Impt.
Cal.	Oakland	10 a.m., Oct.	26..Paving .....	John P. Cook, Clk. Bd. Alameda Co. Supvrs.
Tex.	Velasco	2 p.m., Oct.	26..12 miles hard surface gravel road.....	H. A. Hall, Chr. Rd. Com.
O.	Girard	Noon, Oct.	26..Grading, draining, setting curb and paving.....	R. L. Sanford, Vil. Clk.
Ill.	Chicago	8 p.m., Oct.	26..Laying cement sidewalks.....	W. P. Huebner, Secy.
Wash.	Woodland	2 p.m., Oct.	26..Surfacing with crushed rock, 3 miles of road.....	State Highway Board.
Wash.	Olympia	Oct.	26..Two miles of crushed rock highway.....	State Highway Com.
Ind.	Vincennes	4 p.m., Oct.	26..29,000 sq. yds. paving, including laying 1,800 ft. of curb, 1,600 ft. vitrified pipe, 6 manholes and 18 storm water inlets .....	Board Public Works.
Ind.	Monticello	10 a.m., Oct.	26..Grading, draining and improving road in one township....	A. G. Fisher, Co. Aud.
O.	Toledo	Oct.	27..Grading, curbing and macadamizing Lockwood Ave.....	County Commissioners.
Ind.	South Bend	10 a.m., Oct.	27..Water and sewer connections on street improvement work .....	V. C. Sweeney, Clerk.
N. J.	Elizabeth	8 p.m., Oct.	27..Laying bluestone sidewalk with necessary grading and filling .....	C. H. Smith, Boro. Clk.
O.	Toledo	10 a.m., Oct.	27..Stone road improvements.....	J. Sanzenbacher, Co. Aud.
Ala.	Montgomery	Noon, Oct.	27..Paving with clay gravel.....	Robt. Lait, City Treas.
N. J.	Linden	8 p.m., Oct.	27..1,300 ft. of bluestone sidewalk.....	G. H. Smith, Boro. Clk.
N. Y.	Brooklyn	11 a.m., Oct.	27..Furnishing and delivering 100 tons refined asphalt, also seven contracts for regulating, grading, curbing and laying sidewalks.....	L. H. Pounds, Boro. Pres.
O.	Akron	Noon, Oct.	27..Grading Elizabeth Street.....	C. E. Parker, Dir. P. S.
Ala.	Montgomery	Noon, Oct.	27..Paving with clay gravel.....	Robert Tait, City Treas.
N. Y.	Brooklyn	11 a.m., Oct.	27..100 tons refined asphalt; also paving, grading, curbing....	L. H. Pounds, Boro. Pres.
N. J.	Merchantville	8 p.m., Oct.	27..Concrete sidewalks .....	J. C. Remington, Jr., Boro. Engr., 601 Market St., Camden.
Pa.	Beaver	7.30 p.m., Oct.	27..2,825 yds. paving, 1,400 ft. concrete gutter.....	Philip H. Stevenson, Secy.
N. J.	Newark	3 p.m., Oct.	28..Concrete road .....	F. A. Reimer, Essex Co. Engr.
Ala.	Wedowee	Oct.	28..\$8,000 grading and surfacing road.....	W. S. Keeler, Highway Engr.
N. J.	Jersey City	2 p.m., Oct.	29..Paving portions of two streets.....	M. I. Fagan, City Clk.
N. Y.	Albany	1 p.m., Oct.	30..11.83 miles of bituminous macadam in Franklin County....	J. N. Carlisle, Comr.
N. Y.	Albany	1 p.m., Oct.	30..1.27 miles of brick highways.....	State Highway Com.
N. Y.	Albany	1 p.m., Oct.	30..Improvement of 103.77 miles state highway.....	R. K. Fuller, Sec. State Highway Com.
N. Y.	Brooklyn	11 a.m., Oct.	30..Asphalt paving, 1,580 yds.....	L. J. Pounds, Boro. Pres.
O.	Columbus	2 p.m., Oct.	30..Surfacing 32.4 miles of road with brick, macadam and concrete .....	State Highway Com.
O.	Cleveland	Oct.	31..Road improvement .....	County Comrs.
Minn.	St. Peter	10 a.m., Oct.	31..Rural highway; estimated cost, \$55,000.....	W. H. Holz, Aud.
Nebr.	Lincoln	2 p.m., Nov.	1..Grading and paving roadway No. 667.....	H. E. Wells, Clk.
Okla.	Nowata	10 a.m., Nov.	2..Laying sidewalk .....	Frank Akwright, Co. Clk.
Ind.	Mt. Vernon	2 p.m., Nov.	2..11,575 ft. road improvements.....	Comrs. Posey Co.
Ind.	Lawrenceburg	Noon, Nov.	2..Grading, draining and paving with macadam.....	Comrs. Dearborn Co.
Ind.	Salem	Nov.	2..Construction of 13,300 ft. road; estimated cost, \$6,924.30.	Comrs. Washington Co.
Miss.	Pittsboro	Nov.	2..Culvert and road construction .....	Co. Hwy. Comr.
Miss.	Jackson	2 p.m., Nov.	2..Opening road .....	W. W. Downing, Clk. Bd. Sup.
Ind.	Elwood	Nov.	2..Constructing cement walk .....	C. Rummel, City Clk.
Ala.	Camden	Nov.	2..Grade, drain and surface with chert, about \$12,000.....	County Comrs.
Ind.	Lawrenceburg	Noon, Nov.	2..Road construction .....	W. S. Lagaly, Co. Aud.
Ind.	Salem	Nov.	2..Road construction .....	F. S. Munkelt, Washington Co. Auditor.
Ind.	Greencastle	2 p.m., Nov.	2..Stone road .....	C. L. Airhart, Putnam Co. Aud.
N. D.	Bismarck	8 p.m., Nov.	2..Paving on various streets.....	R. H. Thistlewaite, City Aud.
Ind.	Vincennes	4 p.m., Nov.	2..Laying 1,000 sq. yds. concrete sidewalk and 2,200 ft. limestone curbing .....	Board Public Works.
Ill.	Danville	Nov.	3..14,000 sq. yds. brick paving.....	W. Lewman, Mayor.
Va.	Roanoke	Noon, Nov.	3..Granolithic sidewalks .....	P. H. Tucker, City Clk.
Miss.	Pittsboro	Nov.	3..Road construction .....	Co. Hwy. Comr.
Ark.	Marion	Noon, Nov.	3..2½ miles reinforced concrete road.....	H. W. Hesterly, Engr.
Cal.	Santa Ana	11 a.m., Nov.	4..Surfacing and grading road.....	W. B. Williams, Co. Clk.
Ind.	Shelbyville	11 a.m., Nov.	4..Improvement of highways by grading, draining and paving with gravel. Four contracts: 22,849 ft., 9,500 ft., 14,900 ft., and 11,700 ft.....	F. W. Fagen, Aud.
Ind.	Corydon	2 p.m., Nov.	4..Road construction .....	J. L. O'Bannon, Harrison Co. Auditor.
Ind.	Indianapolis	1.30 p.m., Nov.	4..Construction of highways.....	W. B. Gray, Aud. Fountain Co.
Ind.	Monticello	10 a.m., Nov.	5..Grading, paving and improving road.....	H. E. Fisher, Aud.
N. J.	Elizabeth	Nov.	5..7,815 yds. brick paving.....	Street Com.
Md.	Baltimore	Noon, Nov.	5..Various pieces of state road.....	State Roads Com.
N. J.	Trenton	11 a.m., Nov.	6..Road repair contract B, C, D, E and F.....	State Com. Pub. Roads.
O.	Cincinnati	Noon, Nov.	6..Improvement of Miles Road.....	Co. Comrs.
O.	Cincinnati	Nov.	6..Improvement of Miles and North Bend road.....	Board Co. Com.
Pa.	Uniontown	Noon, Nov.	7..Constructing brick road and Tarvia bound macadam road and furnishing \$25,000 paving bricks.....	Fayette Co. Cont.

## BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
O., Cleveland	.....	Noon, Nov. 9.	Construction of walks and drives at three schools.....	Director of Schools.
N. J., Newton	.....	Nov. 9.	Five miles of macadam road.....	W. Iliff, Dir. Bd. Freeholders.
<b>SEWERAGE.</b>				
Mo., Kansas City	.....	2 p.m., Oct. 25.	Vitrified pipe sanitary sewers.....	J. E. McDonnell, Secy. Bd. Pub. Wks.
N. Y., Niskayuna	.....	2 p.m., Oct. 26.	Two miles sanitary sewers.....	Sewer Comrs. Dist. 2.
O., Fostoria	.....	Noon, Oct. 26.	Construction of sewage disposal plant.....	E. K. Cunningham, Dir. P. S.
Pa., Connellsville	.....	8 p.m., Oct. 26.	Sewer connections.....	J. L. Gans, Pur. Agt.
Ill., Peoria	.....	Oct. 26.	Two sewer systems, 8 to 30-in. vit. pipe, sanitary and storm, total 23,000 ft.....	S. W. Eckley, Pres. B. L. I.
N. Y., Schenectady	.....	2.30 p.m., Oct. 26.	Two miles sanitary sewer.....	Schenectady Co. Sewer Comrs. Parker Bldg.
Ill., Peoria	.....	2 p.m., Oct. 26.	Constructing an extended system of vitrified sewers from 8 to 30 inches in diameter.....	S. W. Ackley, Pres. B. L. I.
Kan., Ft. Scott	.....	1 p.m., Oct. 27.	Sewage purification plant and outlets.....	Chas. O. Tallman, Com. Sts. & Pub. Imps.
N. Y., Brooklyn	.....	11 a.m., Oct. 27.	Sewers, sewer basins and connections.....	L. H. Pounds, Boro. Pres.
Conn., Waterbury	.....	8 p.m., Oct. 27.	Construction of sewers in Willow Street.....	R. A. Cairns, City Engr.
N. Y., Brooklyn	.....	11 a.m., Oct. 27.	Twelve sewer contracts.....	L. H. Pounds, Pres.
Minn., Pine City	.....	Oct. 28.	Sanitary sewer, 4,500 ft. 18-in. vit. pipe.....	Village Clerk
N. J., Passaic	.....	2 p.m., Oct. 29.	Installation of catch basins and pipe connections.....	Board Chosen Freeholders
S. C., Mullins	.....	4 p.m., Oct. 29.	Six miles of sewer pipe and laying.....	Board Public Works
Neb., Albion	.....	Noon, Oct. 30.	Sewer.....	Geo. Brower, City Clk.
N. Y., Brooklyn	.....	11 a.m., Oct. 30.	Laying sewer and constructing pump well & pump house.....	L. H. Pounds, Boro. Pres.
Ill., Lincoln	.....	2 p.m., Oct. 31.	Laying 8,000 ft. of sewer pipe.....	Drainage Comrs.
R. I., Woonsocket	.....	4.45 p.m., Nov. 3.	About 7,000 ft. sanitary sewer, 8 to 18-inch.....	City Clerk
Wis., Appleton	.....	9 a.m., Nov. 3.	Sewer.....	F. L. Williams, City Clk.
Mont., Billings	.....	Nov. 3.	630 feet 8-inch sewer.....	L. E. Torrence, City Clk.
Tex., Corpus Christi	.....	Nov. 3.	Constructing garbage crematory.....	City Clerk
O., Minerva	.....	Noon, Nov. 4.	Construction of storm sewer.....	Austin Freed, Vil. Clk.
Kan., Hutchinson	.....	Nov. 6.	1½ miles of sewer main and sewage pumping plant.....	City Clerk
Kan., Independence	.....	Nov. 7.	Seven blocks concrete and brick storm sewers.....	G. H. Kriehagen, Clk.
Okla., Lawton	.....	2 p.m., Nov. 7.	Storm water sewer system.....	Dept. of Interior, Washington, B. Sweeney, Asst. Secy.
La., Clinton	.....	8 p.m., Nov. 10.	Sanitary and storm sewers.....	F. W. Leedham, City Clk.
Tex., Dallas	.....	2 p.m., Nov. 11.	Construction of sewage disposal plant.....	Board City Comrs.
Ill., Chicago	.....	Noon, Nov. 14.	.....	Sewerage & Water Board
La., New Orleans	.....	Noon, Nov. 14.	Sewer extensions, water extensions, connections to sewers and water mains, etc.....	F. S. Shields, Sec. Sew. & Water Board.
Ia., Iowa Falls	.....	Nov. 15.	Sewer and water extensions, \$20,000.....	J. H. Farrington, City Engr.
Neb., Mitchell	.....	6 p.m., Nov. 17.	Lateral sewers.....	G. E. Mark, Village Clk.
S. C., Allendale	.....	Nov. 18.	Complete system of sanitary sewers, electric plant and water works.....	W. F. Googe, Chr. Com. P. W.
<b>WATER SUPPLY</b>				
Mo., Elsberry	.....	1 p.m., Oct. 24.	Steam driven pumping plant.....	Board of Supv.
Fla., Palmetto	.....	2 p.m., Oct. 26.	Two 500-gallon Triplex pumps and two oil engines.....	A. M. Lamb, Pres Council.
W. Va., Wheeling	.....	Oct. 26.	Two 60 H.P. water turbines and two 50 cu. ft. air compressors.....	U. S. Engr., Wheeling.
Fla., Palmetto	.....	2 p.m., Oct. 26.	Pumping plant installation.....	A. M. Lamb, Pres. Council.
H. I., Honolulu	.....	3 p.m., Oct. 27.	Constructing concrete water tower, tank, etc.....	O. Wenderoth, Superv. Arch., Washington, D. C.
S. C., Mullins	.....	Oct. 29.	Constructing water works and sewerage.....	G. C. White, Engr., Charlotte, N. C.
S. C., Mullins	.....	4 p.m., Oct. 29.	Construction of electric and gasoline pumping station, reservoir, tower and tank, 5 miles of water mains, and 6 miles of sewers.....	Board Public Works.
Okla., Billings	.....	Oct. 29.	Electric light plant and water works system; estimated cost, \$30,000.....	E. P. Archer Co., Kansas City, Mo.
Neb., Clatonia	.....	8 p.m., Oct. 30.	Water system, \$9,000.....	J. W. Steinmeyer, Village Clk.
Wash., Seattle	.....	Oct. 30.	Water mains, \$10,000.....	Port of Seattle Comm.
O., Trotwood	.....	2 p.m., Oct. 30.	Extension and mains for water works plant.....	J. D. Fox, Clk. Bd. Pub. Af.
Va., Norfolk	.....	Oct. 31.	\$75,000 worth water meters.....	Board of Control.
Kan., Little River	.....	About Nov. 1.	Constructing water system, cost \$25,000.....	W. B. Rollins, Cons. Engr., Kansas City, Mo.
Ill., Grey's Lake	.....	Nov. 2.	Deep well pump and motor.....	Village Clk.
La., Mansfield	.....	Nov. 3.	Pumping machinery.....	L. E. Colvin, City Clk.
La., Houma	.....	Nov. 6.	Direct-connected centrifugal pumps, 200 gallons capacity.....	Mayor.
La., Houma	.....	Nov. 6.	Electrical and pumping equipment.....	Mayor.
La., New Orleans	.....	Nov. 14.	Water main and sewer extensions.....	Sewerage & Water Board.
La., New Orleans	.....	Noon, Dec. 1.	150,000 lbs. of 5-ft. and 12-ft. riveted steel pipe.....	J. S. Shield, Secy.
Cal., San Francisco	.....	Dec. 1.	Construction of 2,000,000 gallon reservoir.....	Water Comr.
Greece, Athens	.....	1915, Mar. 30.	Water supply for Athens and additional cities, estimated cost, \$14,000,000.....	Bur. of Foreign & Domestic Commerce, Wash., D. C.
<b>LIGHTING AND POWER</b>				
W. Va., Wheeling	.....	Oct. 26.	Furnishing water turbines and air compressors.....	J. P. Jervay, Con. Engr.
Australia, Sydney	.....	Oct. 26.	Supplies delivered and erection of wet air filters.....	Municipal Council.
Pa., Williamsport	.....	10 a.m., Oct. 26.	Street lighting for period of three years.....	Samuel Stabler, Supt. P. Aff.
Pa., Allentown	.....	5 p.m., Oct. 26.	Installation and operation of street lights.....	J. H. Gehris, Secy.
N. Y., Bath	.....	11 a.m., Oct. 27.	Alterations to electric plant at Soldiers' & Sailors' Home.....	J. H. Goulden, Pres. Bd. Trus.
Kan., Topeka	.....	10 a.m., Oct. 30.	Wiring for Capitol Building.....	Chas. H. Chandler, State Arch.
D. C., Washington	.....	Oct. 31.	Water pipe lighting fixtures.....	Engineer Depot, Washington Barracks, D. C.
Minn., Minneapolis	.....	3 p.m., Nov. 3.	Underground conduit and cable system.....	O. Wenderoth, Wash., D. C.
O., Toledo	.....	10 a.m., Nov. 6.	Heating and lighting plant at Children's Home.....	C. J. Sanzenbacher, Co. Aud.
O., Toledo	.....	Nov. 6.	Construction of power house and equipment for power plant.....	Board Co. Comrs.
Ill., Collinsville	.....	Nov. 6.	Lighting and fixtures for post office.....	O. Wenderoth, Wash., D. C.
Ill., Canton	.....	Nov. 10.	Lighting and fixtures for post office.....	O. Wenderoth, Wash., D. C.
Tenn., Fayetteville	.....	Nov. 19.	Lighting fixtures for post office.....	O. Wenderoth, Wash., D. C.
<b>FIRE EQUIPMENT</b>				
Wash., Everett	.....	10 a.m., Oct. 26.	Motor driven city service hook and ladder; truck, 40-gallon chemical tank and electric lighting.....	Louis Lesh, City Clk.
N. J., Passaic	.....	8 p.m., Oct. 26.	Fire alarm system.....	Fire & Water Committee.
N. J., Rutherford	.....	8 p.m., Oct. 26.	Fire alarm telegraph system.....	N. O. Berry, Boro. Clk.
Minn., Minneapolis	.....	3 p.m., Oct. 26.	9,000 ft. 2¼-inch hose, 1,000 ft. 3-inch hose.....	K. E. Alexander, City P. Agt.
N. J., Wallington	.....	8 p.m., Oct. 26.	Fire alarm telegraph system.....	N. O. Berry, Boro. Clk.
N. Y., Brooklyn	.....	10 a.m., Oct. 27.	1,800 ft. air hose, 4,000 ft. 1½-inch hose for Brooklyn Navy Yard.....	Bur. of Supplies, Navy Dept., Washington, D. C.



## BIDS ASKED FOR

STATE	CITY	RECD UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
N. J.	Garwood	8 p.m., Oct. 27	Borough Hall and fire house	Mayor and Council.
D. C.	Washington	10 a.m., Oct. 27	4,800 ft. of hose	Bur. of Supplies, Navy Dept.
W. Va.	Wheeling	Oct. 28	One aerial truck	Board of Control.
Ont.	Toronto	Oct. 31	Supplies and fire alarm equipment	H. C. Hocken, Mayor.
Kan.	Lawrence	5 p.m., Nov. 2	1,000 ft. 2½-in fire hose	F. B. Brooks, City Clk.
Cal.	Fresno	9 p.m., Nov. 2	5,000 ft. 2½-in. hose, 2,500 ft. 1½-in. hose	W. H. Ryan, City Clk.
Pa.	Lansdowne	Nov. 3	500 ft. 2½-inch hose	J. W. Davis, Secy.
<b>BRIDGES</b>				
Ind.	Indianapolis	10 a.m., Oct. 24	Repairs to bridge	W. T. Patten, Aud.
Ark.	Monticello	Noon, Oct. 24	Steel bridge over Bayou Bartholomew	W. A. Coker, Co. Judge.
O.	Akron	11 a.m., Oct. 25	Construction of road culvert	C. L. Dower, Clk.
Pa.	Norristown	11 a.m., Oct. 26	Paving bridge with creosoted blocks	J. M. Jacobs, Controller.
N. J.	Perth Amboy	2.30 p.m., Oct. 26	Construction of concrete and steel bridge	Board Chosen Freeholders.
Me.	Portland	Noon, Oct. 26	Bridge between Portland and South Portland	Cumberland Co. Comrs.
La.	New Orleans	Oct. 26	Trunnion bascule lift bridge	A. G. Ricks, Comr.
O.	Akron	Oct. 26	Construction and repair of bridges	Co Comrs.
N. J.	New Brunswick	2.30 p.m., Oct. 26	Reinforced concrete bridge	Alvin E. Fox, Perth Amboy Co. Engineer.
O.	Ravenna	1 p.m., Oct. 26	100 foot steel bridge	Comrs. Portage Co.
Pa.	Mercer	Noon, Oct. 27	One ton steel floor joists	H. C. Comstock, Clk. Mercer Co.
Kan.	Ottawa	Oct. 29	Concrete bridge	J. E. Rose, Aud.
Kan.	Ottawa	Oct. 29	Constructing stone pier substructure and one concrete abutment of bridge	J. E. Rose, Co. Aud.
O.	Columbus	2 p.m., Oct. 30	Constructing bridges and culverts in Butler County	State Highway Com.
Me.	Portland	Noon, Nov. 2	Construction of bridge between Portland and South Portland	Board Co. Comrs.
O.	Painesville	Noon, Nov. 2	Steel highway bridge over Chagrin River	W. A. Davis, Co. Aud.
Kan.	Stockton	10 a.m., Nov. 2	16-foot bridge	Board Comrs., Rooks Co.
Ind.	Lebanon	Nov. 3	Construction of bridge approach	D. M. Clark, Aud. Boone Co.
Ind.	Rich Valley	1.30 p.m., Nov. 4	Paving bridges	D. Showalter, Aud.
O.	Dayton	10 a.m., Nov. 6	Materials and labor for construction of a 6-span steel bridge	W. H. Aszling, Secy.
Miss.	Vicksburg	Nov. 8	Steel and concrete bridge, to cost \$18,000	Comrs. Warren and Hinds Co.
S. D.	Britton	1 p.m., Nov. 10	Bridges and culverts	Comrs. Marshall Co.
Fla.	St. Augustine	10 a.m., Nov. 15	Concrete bridge	W. W. Snow, Clk. Circuit Ct.
Neb.	Ord	Nov. 17	Concrete girder bridge	Co. Clerk.
<b>MISCELLANEOUS.</b>				
Ill.	Chicago	11 a.m., Oct. 24	Steel structure for crane repair shop at reduction plant	G. P. Young, Comr. Health.
Ont.	Toronto	Oct. 27	Overhead and operating travelling crane	Mayor.
D. C.	Washington	Oct. 27	Complete construction of Post Office at Carnegie, Pa.	Supv. Architect.
Tex.	Corpus Cristi	Nov. 3	Constructing garbage crematory or incinerator	City Clk.
Minn.	Minneapolis	2 p.m., Nov. 3	Construction of underground conduit	Supv. Architect, Wash., D. C.
Pa.	Pittsburgh	3 p.m., Nov. 3	Construction of Schenley High School	Board of Education.
Ind.	Terre Haute	10 a.m., Nov. 5	Three-story brick and stone Normal School	Board of Trustees, J. Jump, Secy.
Okla.	Okmulgee	Nov. 9	Construction and equipment of incinerator and garbage disposal plant, capacity 5 tons for 24 hours	Comrs. of Finance.
O.	Cleveland	Nov. 10	Three-story school, reinforced concrete floors and brick wall construction; estimated cost, \$200,000	Board of Education.
Ill.	Canton	3 p.m., Nov. 10	Construction of two-story post office	O. Wenderoth, Wash., D. C.
Ore.	Dalles	Nov. 12	Federal building	Architect, Washington, D. C.
Va.	Norfolk	Jan. 16	150 ton capacity floating revolving crane; cost, about \$450,000	Bur. Yds. & Docks, Navy Dept., Wash., D. C.

## STREETS AND ROADS

**Bay Minette, Ala.**—Good Roads Association of Baldwin County has decided to circulate petitions in different districts, requesting Board of Revenue to call bond election to vote on question of issuing road improvement bonds to amount of \$250,000.

**Tucson, Ariz.**—Resolution of intention to pave Toole Ave. and portions of various other streets has been passed. Resolution provides for bitulithic paving on Toole Ave., from Broadway to Sixth Ave., on Pennington St. from Sixth Ave. to Toole and on portions of Fourth Ave, Fifth Ave., Herbert St. and Broadway. Laying of sidewalks and curbs and construction of necessary culverts, etc., on streets to be paved are also provided for in resolution.

**Fairbanks, Cal.**—The Carmichael Colony Improvement Club has unanimously voted in favor of proposed issue of bonds for good roads.

**Greka, Cal.**—Supervisors have unanimously authorized purchase of \$50,000 more state highway bonds, same to be sold to highest bidder.

**Oakland, Cal.**—City Council has adopted specifications and called for bids for furnishing material for corrugated iron culverts for street department for fiscal year 1914-1915.

**Pasadena, Cal.**—Street superintendent has been authorized to buy road planer at cost not to exceed \$300.

**Red Bluff, Cal.**—Seven and one-half miles of rights of way through private property on route of state highway from Red Bluff to Corning have been obtained by Supervisors. County has agreed to fence both sides of right of way, total monetary consideration being \$3,195.

**Salinas, Cal.**—Bond election will be held Nov. 3 for voting on bond issue of \$570,000 for roads and bridges. Address County Clerk.

**San Francisco, Cal.**—Works Board has decided to have Clarendon and Burnett Aves. paved. Board has also resolved to improve Felton and Madison Sts., as requested by University Heights Improvement Club.

**San Francisco, Cal.**—Board of Works has called for bids for improving 10th Ave. from Lawton to Moraga St.; 19th St. westerly from Douglas; 20th, between Kansas and Rhode Island; 21st, from Nee to Sanchez; Richland Ave., from Murray to Andover; Wolfe St. and Sweeny, from Barneveld to Boylston.

**San Francisco, Cal.**—Resolutions of intention to order improvement of following streets have been passed by board: Alma, from Cole to Belvedere; O'Farrell, from Polk to Larkin; Bay, from Van Ness to Polk; 42d Ave., from Irving to Judah; 44th, from Clement to Point Lobos; 29th, from Anza to Balboa; Irving, between 47th and 48th; 43d, from Geary to Clement; 47th, from Lincoln Way to Irving; 18th, between Judah and Kirkham, and Judah, from 17th to 18th Ave. City is to pave intersection of Plymouth and San Jose Aves. and Sagamore St.

**Santa Rosa, Cal.**—Bond election will be held Nov. 3 for voting on issue of \$1,600,000 road bonds. Address, County Clerk.

**Santa Ana, Cal.**—Board of Supervisors has instructed County Surveyor McBride to draw plans and specifications for proposed paved road between Newport Beach and Huntington Beach. This section will be part of coast boulevard that is to be built along Orange County's coast line.

**Yreka, Cal.**—Bond election will be held Nov. 3 for voting on issue of \$720,000 highway improvement bonds. Address, County Clerk.

**Wilmington, Del.**—At meeting of Board of Park Commissioners matter of building road as outlet to Board's tract of land in North Brandywine Park, opposite Rockford Park, was discussed.

**Bartow, Fla.**—Citizens have authorized issuance of \$75,000 bonds for additional street paving.

**Bartow, Fla.**—Citizens of Bartow have voted favorably on bond issue for \$75,000 for street improvements. It is intended to build about 3 miles of macadam asphalt pavement in various parts of city.

**Bartow, Fla.**—County Commissioners of Polk County have granted request of County Good Roads Association to spend about \$7,000 on various types of roads in Polk County. By this method it is thought the best type can be ascertained, and this permanently adopted for future road building.

**Daytona Beach, Fla.**—County Commissioners of Volusia County have decided to have road built to south limits of town of Daytona Beach to east end of Port Orange bridge along Halifax Peninsula.

**Haines City, Fla.**—Plans are now on foot and nearing development for improvement of road between Loughman and Winter Haven—in fact, entire route to Bartow.

**St. Augustine, Fla.**—Election will be held in Palm Beach County on Nov. 17 to establish special road and bridge district, which will provide for building of highway and necessary bridges from Stuart westward to shores of Lake Okeechobee.

**Chicago, Ill.**—County Board has voted to pave Milwaukee Ave. from Glenview Road to Desplaines River with concrete at estimated cost of \$36,000.

**Springfield, Ill.**—George L. Harnsberger, engineer for the Park Board, is drawing plans and has completed specifications for hard roads which will be constructed in Bergen Park, in east side of city. Road, which will be of macadam construction will be 6,100 ft. in length and will connect with East Washington St. hard road at two points. At latter date, number of additional roads will be built in park, and will connect with main loop.

**Bedford, Ind.**—Four thousand eight hundred dollars worth of Shawswick township gravel road bonds have been sold by County Treasurer Earl G. Short to Thomas A. Holland, only bidder, at par.

**Ft. Wayne, Ind.**—Board of Works will compile list of streets to be paved with brick which most urgently need attention and will direct Canton Brick Co. to ship paving brick to Ft. Wayne, billing it with view to supplying contractors having these jobs.

**Richmond, Ind.**—Bonds in sum of \$3,250 for improvement of County Line Road, between counties of Wayne and Randolph, will be sold Oct. 21 by H. D. Good, County Treasurer.

**South Bend, Ind.**—Portage Ave. between end of brick pavement and River-view cemetery is being improved by repair road.

**Oskaloosa, Ia.**—City Clerk Carlin has been instructed to advertise for bids for paving of F Ave., between C and D Sts., to be received Oct. 26.

**Fort Scott, Kan.**—Ordinance has been passed providing for construction, grading, paving, curbing and guttering of that portion of Broadway St. extending from south line of Sixth St. to north line of Charles St.

**Hutchinson, Kan.**—Twelve blocks of concrete curbing and sidewalk are to be put in as first step in improvement of Daggett tract, north of 11th and west of Main St.

**Leavenworth, Kan.**—Resolutions providing for grading, curbing and paving of South Esplanade have been placed on their second reading.

**Salina, Kan.**—Ordinance has been adopted providing for paving of alley between Fourth and Fifth Sts., from Iron Ave. to Walnut St., specifying manner of construction, providing for the cost, etc. Chas. E. Banker is City Clerk.

**Louisville, Ky.**—Bids for paving of Ninth St., between Magazine and Cedar, with granite blocks, have been opened by Board of Public Works. The Bickel Asphalt Paving Co. and the L. R. Figg Co. were only bidders. Compilation will be submitted to the board by City Engineer David R. Lyman. Estimated cost of work is \$20,000.

**Baltimore, Md.**—Bond election will be held Nov. 3 for voting on street improvement bonds in sum of \$1,500,000. Address, City Clerk.

**Baltimore, Md.**—Paving Commission is considering paving of Light St. from Fort Ave. to Baltimore and Ohio railroad tracks for next year.

**Cumberland, Md.**—W. W. Crosby, paving expert, has recommended brick paving for Beall, Allegany, Chase, Cumberland, Johnson, Shriver, Linden, Baltimore Ave., Wineow, Kearney, Orchard and Second Sts. Bitulithic paving—Franklin, Emily, Ann, Williams, Goethe, Bedford and Second Sts. Smith and sections of Smallwood St. asphalt. Asphaltic concrete—Patterson, Wallace, Valley, Furnace, Columbia, Boone, First, Grand and Oldtown road. Amiesite—Frederick and Pear Sts. The total estimate of approximated expense is as follows: Brick, \$105,000; bitulithic, \$54,000; sheet asphalt, \$5,000; asphaltic concrete, \$63,000; amiesite, \$13,000; total, \$240,000. Report was ordered filed.

**Hagerstown, Md.**—Ordinance has been passed for paving of Ladle Spring Alley. Henry Davis is clerk.

**Lynn, Mass.**—Board of Selectmen held meeting to consider question of awarding contract for building of Wyman and Bubler roads. No final action was taken and bids will be taken up for final consideration at next meeting. Two bids were received, John Cudihy bidding \$5,075 on plan one and \$7,964 on plan two, and Porter Ice Co. bid \$4,500 on plan one and \$6,500 on plan two.

**Detroit, Mich.**—Interest in good roads petition being circulated by Henry E. Joy is state-wide. Already over 40,000 signatures have been received.

**Flint, Mich.**—See "Miscellaneous."

**Flint, Mich.**—Board of County Road Commissioners have asked Board of Supervisors to raise \$81,000 for good roads next year. Of that amount \$6,000 is wanted for township bonds, \$25,000 for labor and materials for repairs and \$50,000 to finish county road system. Communication has been referred to committee on estimates and expenditures.

**Kalamazoo, Mich.**—The Good Roads Commission has asked Board of Supervisors for appropriation of \$70,000 to be raised by taxation, for purpose of constructing additional highways in Kalamazoo County.

**Duluth, Minn.**—Duluth will have a good highway from central part of city to steel plant and its nearby suburbs early next year, according to tentative schedule of street improvements for 1915, which has been prepared by Commissioner Roderick Murchison, head of works division.

**St. Joseph, Mo.**—Ordinances have been adopted for improvement of various streets.

**St. Joseph, Mo.**—J. H. Barnes has suggested that contract for paving of Noyes and "A" boulevards be let this winter, or in February or March, so contractor can get his equipment ready. There will be in two boulevards 45,000 yds. of pavement, about 20,000 lin. ft. of sidewalks, and 20,000 lin. ft. of curbing to be constructed.

**St. Joseph, Mo.**—The goods roads issue has been put before Board of Supervisors in presentation of report of road commission on work done during last year and recommendations for new year. Road commission and advisory committee of board recommend that all highways to be constructed next year be built of water bound macadam. Commission also recommends that \$60,000 of the \$500,000 bond issue be sold for building of a permanent highway between Stevensville and Bridgman. Commission in its recommendation for 1915 makes provisions for 31 additional miles. All the roads, it is provided, shall be built of water bound macadam, 12 ft. in width, excepting Lake Shore road and the Paw Paw River road between Coloma and Watervliet villages, which have been designated as state trunk highways and which to receive double state reward must be constructed 16 ft. in width. Following are roads scheduled for improvement Paw Paw River road, Hagan and Watervliet Townships, extending east to west limits of village of Coloma, 3.2 miles, \$28,220. Paw Paw River road, Watervliet Township, east from gravel road to west limits of Coloma,  $\frac{3}{4}$  mile, \$5,435. Pipestone road, Sodus Township, from the end of present macadam, south-east to Sodus Township, thence east to line between Sodus and Pipestone Townships, 4 miles, \$27,050. Territorial road, Benton Township, beginning at east end of present macadam and extending east to a line between Benton and Bainbridge Township, 3 miles, \$22,880. Napier road, Benton and Bainbridge Townships, commencing at end of present macadam at Pearl Grange Hall and extending easterly to Spinks Corners,  $2\frac{1}{4}$  miles, \$16,200. Niles road, Oronoko Township, commencing at the northerly end of present macadam and extending northeasterly to macadam at the town line between Roy-alton and Oronoko Townships, 1.6 miles, \$10,250. Gallen-Stevensville road, Lake and Weesaw Townships, beginning at south end of the present macadam south of Baroda, south to road extending between Glendora and New Troy, 3.75 miles, \$22,375. Gallen-Buchanan road, Gallen, Weesaw, Bertrand and Buchanan Townships, beginning at the Gallen-Stevensville road on line between Gallen and Weesaw Townships and extending east and northeast to west limits of Buchanan, 6.4 miles, \$41,500. Lake Shore road, Lincoln and Lake Townships, between Stevensville and Bridgman, 6 miles, \$48,420 (state trunk highway). Total estimate for construction of these 31 miles is \$222,310.

**Roundup, Mont.**—Bond election will be held Nov. 3 for voting on bond issue of \$200,000 for roads. Address, County Clerk.

**Atlantic City, N. J.**—Resolutions authorizing County Engineer Nelson to make final survey of Somers Point-Longport Blvd., prepare specifications and cross sections and submit them to State Road Commissioner Stevens, have been passed by Board of Freeholders without a dissenting vote. It is estimated that road will cost in neighborhood of \$240,000, 40 per cent. of which will be contributed by state on actual road work and 20 per cent. on bridges. It will also be necessary for board to secure ap-

proval of War Department to building of bridges over navigable streams. Survey has also been ordered for the Absecon-Atlantic City Blvd. This road will begin at intersection of Philadelphia and New York Roads at Absecon and continue across meadows to Venice Park and thence into Atlantic City. According to estimate made by County Engineer Nelson it will cost about \$190,000.

**Jersey City, N. J.**—Bids will be received by M. I. Fagan, City Clerk, until 2 p. m., Oct. 29, for paving parts of Eno Place and Stegman Place with asphalt.

**Morrisville, N. J.**—Widening of Trenton Ave. is being planned.

**Paterson, N. J.**—Ordinance has been passed providing for grading, curbing and guttering of certain streets and avenues of city.

**Paterson, N. J.**—Ordinance has been adopted to provide for grading, curbing and guttering of East 33d St., from Broadway to the Passaic river.

**Port Republic, N. J.**—Requesting that county take over mile of road in Borough of Port Republic connecting Cologne-Port Republic road with Absecon-Chestnut Neck road, residents of Port Republic Township has filed petition to this effect with Board of Freeholders. Matter has been referred to road committee.

**Albany, N. Y.**—Fifteen contractors have submitted bids for construction of road No. 5516, Lafayette-Tully, Onondaga County. Lowest bid, \$127,625, was that of Dale Engineering Co., of Utica. James Anderson, Albany, and the Monroe Roads of Pittsford each bid within few hundred dollars of Dale Co. The Sullivan Construction Co., John Kelly and Samuel Borin, all of Syracuse, were also bidders. The Joseph Walker Construction Co., of Albany, bid low on Durhamville-Rome Road, Oneida County. Bid was \$121,161.50. Low bidder on Enfield Falls-Enfield Center Road, Tompkins County, was Peter F. Connelly Co., Horseheads. The bid was \$63,004.40. Other bids opened were: Hartford Mills-Dryden, Part 1, 5.25 miles, Cortland County, Richard Hopkins, Troy, \$45,449.50, low. Truxton-Deruyter, Part 3, Cortland County, 2.11 miles, Crowe & Walsh, Pittsfield, Mass., \$26,473.25, low.

**Amsterdam, N. Y.**—A number of Amsterdam business men are in Utica to confer with J. H. Sturtevant, division engineer under Commissioner of State Highways John N. Carlisle, with idea of furthering proposition to construct macadam highway from Manny's Corners to Saratoga line at Ballston Spa.

**Brooklyn, N. Y.**—Improvement of Fort Hamilton Parkway is urged.

**Hempstead, L. I., N. Y.**—Taxpayers of Hempstead town will decide on Election Day whether or not dangerous grade crossing on Long Beach division of Long Island Railroad east of Oceanside will be eliminated and 100-ft. wide highway constructed from Oceanside to Long Beach costing \$300,000.

**Little Falls, N. Y.**—Question of issuing paving bonds in sum of \$50,000 will be submitted to voters on November 3.

**Cincinnati, O.**—Ordinances have been adopted for improvement of various streets.

**Columbus, O.**—Bids will be received by State Highway Commissioner until 2 p. m., Oct. 30, for improvement of about 32.40 miles.

**Mansfield, O.**—Portion of Springmill St. from city limits to brick paving along Hahn Farm is to be improved by brick-paving from fair grounds to present brick road. Improvement is to be built of brick, 15 ft. wide and  $\frac{3}{4}$  of a mile long. Cost will be borne by County Commissioners and Madison County trustees.

**Oregon City, Ore.**—Permanent improvement of Main St. is favored by County Court.

**Portland, Ore.**—With completion of number of street and sewer improvements, Council has found it necessary to sell another block of city improvement bonds, amounting to \$163,000. Date of sale will soon be fixed by Commissioner Bigelow, of Department of Finance.

**Seaside, Ore.**—City Council has decided to pave with bitulithic, Twelfth Ave.

**Connellsville, Pa.**—Ordinances for grading and paving of Cottage Ave., between Fayette St. and East Murphy Ave., between Cottage Ave. and East Main St., have been introduced.

**Connellsville, Pa.**—Ordinance has been passed to provide for grading, paving and curbing of East Murphy Ave. between intersection of North Cottage Ave. with East Murphy Ave., and East Main st.

**Philadelphia, Pa.**—The Frankford Business Men and Taxpayers' Association voted to petition Director Cooke to ask



councils to pass ordinance for resurfacing of Bristol pike and State road from Bridge St., Frankford, to City line, at Torresdale. It was also voted to ask councils to resurface ordinance now in committee for paving of Oxford pike from Leiper St. to Frankford Ave with vitrified brick.

**Wilkes-Barre, Pa.**—Resolution has been adopted authorizing department of streets to advertise for bids for grading North Empire St., between Coal and East Market Sts.

**Williamsport, Pa.**—A heavily signed petition from people of western part of city asking for paving of Water St. has been presented by Commissioner James A. L. Minor, superintendent of public improvements.

**Woonsocket, R. I.**—Resolution has been adopted appropriating \$900 for grading Ninth Ave. and Chapel St.

**Sioux Falls, S. D.**—Petitions for paving of more than thirty blocks of streets in Residence districts of Sioux Falls have been received by city commission and placed on file. Districts where paving is being demanded are Dakota Ave., between 4th and 21st St.; First Ave., from 10th to 21st St.; Summit Ave., from Omaha railway to 18th St.; and Seventh Ave., between 20th and 21st St.

**Deer Lodge, Tenn.**—County of Morgan has voted \$27,000 to pike 100 miles of road.

**Lynchburg, Va.**—City Council has made appropriation for macadamizing Poplar and Lorain Sts.

**Norfolk, Va.**—Board of Control has advertised for bids for 1,000 lin. ft. granite curbing, 6 sets of corners and 500 tons of Belgium block for improvement of Salter St.

**Benwood, W. Va.**—Order has been given street commissioner by Council ordering pavement of 18th between Marshall and Ashland Ave., the work to be started immediately.

**Seattle, Wash.**—Plans have been received from engineer for paving of 8th Ave. West at cost of \$41,000, and for paving of 5th Ave. North at cost of \$13,000.

**Barron, Wis.**—Applications for road and bridge work to be done in Barron Co. during next year have just been received by County Clerk Hazelberg. Under state aid law, county at large must make appropriation equal to total of town levies and state appropriation nearly equals it, so total fund for road and bridge work in county will be nearly \$60,000 for coming year.

#### CONTRACTS AWARDED.

**Hamilton, Ala.**—To Boyd & Bradshaw, Birmingham, for construction of approximately 50 miles of graded road, at about \$60,000.

**Corona, Cal.**—For macadamizing 11,000 lin. ft. on 6th St., to Johnson Shea Co., Riverside, at \$37,633.

**Pasadena, Cal.**—Hart & Ducey, whose bid was \$12,564.26, have been awarded contract to improve Hill Ave. by city commission. Their bid was: Paving, per sq. ft., 6½c.; grading, per lin. ft., 65c.; curb, 25c.; gutter, 13c. Other bids were submitted as follows: Charles A. Baldwin, \$12,860.16; J. E. Haddock, \$13,089.46; H. E. Cox, \$14,495.94; Thomas C. Breitenstein, \$12,953.50; James M. Montgomery, \$15,410.03; Andrew Holloway, \$13,631.19; J. C. Kinsman, \$12,884.06; George Holloway, \$13,638.45.

**Red Bluff, Cal.**—Contract for grading 12-mile stretch of state highway between Lindo Channel, where Chico Esplanade comes to an end, and Tehama County line, has been sublet to S. G. & R. G. Fleming, and concrete work to Holly & Betts, of San Francisco.

**San Bernardino, Cal.**—To W. D. Bohan, city, at \$35,000, for paving and curbing one block on F St., one block on Court St. and seven blocks on 6th St.

**Suisun, Cal.**—By City Trustees to W. B. Connelly contract to macadamize Union Ave. at cost of \$5,941.

**Chicago Heights, Ill.**—By Board of Local Improvements contract for paving alley between West End Ave. and Vincennes Ave. to Chicago Heights Coal Co. There was only one bidder. The company's figures were \$1.75 per yard for concrete, and 10 cts. a foot for drain ditch.

**Edgar, Ill.**—By Commissioners Highways, Edgar Township, to T. E. Ford, Paris, at \$10,690, for furnishing and placing 4,000 cu. yds. gravel on Horace-Garland Road, and constructing concrete culverts and addition of concrete wing walls to existing bridge; also 1,760 cu. yds. on Cherry Point Rd. Other bids: Ralph Baum, Paris, \$11,250; Chrisman

Constr. Co., Chrisman, \$13,000; R. R. Johnson, Chrisman, \$12,497.

**Moline, Ill.**—To McCarthy Improvement Co., at \$2.10 a sq. yd., for paving of 13th St. from First to Seventh Aves., with asphalt.

**Paris, Ill.**—To L. E. Ford, city, at \$10,690, for 6,160 cu. yds. of graveling on Horace, Garland and Cherry Point Rds., and for construction of culvert to bridge in Edgar Twp.

**Fort Wayne, Ind.**—Board has awarded the C. E. Moellering Construction Co., Fort Wayne, contract for paving alley west of Calhoun St., from Washington to Jefferson, at \$1.90 a lin. ft., and from

**South Bend, Ind.**—For brick paving on Cottage Grove Ave. to H. N. Barnes, South Bend, Ind.

**Anamosa, Ia.**—For construction of 9,600 sq. yds. of paving with 3-in. vertical fibre brick and asphalt filler to Dearborn Const. Co., Waterloo, Ia., at \$2.05 per sq. yd., and to same firm for 2,900 lin. ft. of curbing at 58 cts. per lin. ft. C. V. Fisher is Clerk.

**Cedar Falls, Ia.**—E. A. Randall was successful bidder for job of constructing from between 1,600 and 2,000 ft. of new concrete sidewalk, let by Council Street Committee. He was awarded contract at 10 cts. per sq. ft.

**Council Bluffs, Ia.**—First section of rural road in Pottawattamie Co. to be paved will be that portion of South Ave. lying between city limits and Iowa School for Deaf, contract for which was awarded by Board of Supervisors to E. A. Wickham & Co., of this city, at \$1.44 per sq. yd. for concrete pavement. Project covers a section of road about 1,100 ft. long and comprises about 3,500 sq. yds. of paving.

**Des Moines, Ia.**—For paving Washington Ave. with asphalt to Jas. Horbin & Co., at \$1.80 per sq. yd. Horace Susong is City Clerk.

**Dubuque, Ia.**—Contract for constructing number of sidewalks has been awarded to G. L. Korman at 9 cts. per sq. ft.

**Winfield, Kan.**—For furnishing material and constructing 10 blocks brick pavement, about 12,500 sq. yds., to Elliott & Vance, Fredonia, at \$1.49 per sq. yd. Other bids: Chas. T. Besler Co., Winfield, \$1.63, and E. T. Wilcox & Co., Kansas City, Mo., \$1.86. W. C. Hall is City Clerk.

**Alexandria, La.**—To F. T. Constance, at \$10,000, for paving of Lee St. from Bolton Ave. to city limits, with gravel.

**Mansfield, La.**—For constructing about 3½ miles concrete sidewalks to H. J. Bonnell, Bossier City. L. E. Colerin is City Clerk.

**Oberlin, La.**—To J. B. Grigsby Construction Co., Houston, Tex., for construction of 27 miles of good road in Ward 1, by Police Jury of Allen Parish.

**Annapolis, Md.**—At his bid of \$1.33 per sq. yd., Contractor Frank M. Duvall has been awarded contract for laying sidewalks along new State road leading to Camp Parole at a meeting of the County Commissioners.

**Baltimore, Md.**—For repaving Centre and Saratoga Sts. to Baltimore Asphalt Block & Tile Co. Material to be used is sheet asphalt, with vitrified brick in car track area, and prices are \$1.78 per sq. yd. for asphalt and \$2.40 for the brick. Two additional contracts were awarded as follows: No. 89, wood and granite block paving for the Paving Commission, to the George Long Contracting Co. at a total bid of \$9,478.75; No. 97, vitrified brick and redressed granite blocks in alleys, for the Paving Commission, to P. Reddington & Son, at the total bid of \$20,583.

**Baltimore, Md.**—The Baltimore Asphalt Block and Tile Co. was only bidder on Contract No. 98 for Paving Commission, which calls for sheet asphalt pavement on Centre St. from Howard St. to Washington Pl., Saratoga St. from Howard to Greene, and Greene from Lexington to Franklin Sts. Price submitted was \$1.78 per sq. yd. H. O. Flor was lowest bidder on contract for grading lot at northwest corner of Poplar Grove and Presstman Sts. He asked 28 cts. a sq. yd.

**Boston, Mass.**—State Highway Commission has opened bids for construction of about 1.9 miles of new state highway in Lanesboro, beginning about four-fifths of a mile south of New Ashford town line and extending southerly. The bidders and bids were as follows: O. T. Benedict, of Pittsfield, \$13,780; R. W. Emerson, of Pittsfield, \$10,313; M. C. Camarce, of Lee, \$13,191; Corder & Montague, of Springfield, \$16,462; Colorado Const. Co., of Boston, \$12,287; Framingham Const. Co., of Framingham, \$11,482; Way & Cellilli, of Springfield, \$11,057; Horne-Lowe Contracting Co., of Millbury,

\$13,232; Lindholm & Cobb, of Pittsfield, \$13,046; A. D. Bridge Sons Co., of Hazardville, Conn., \$11,931; W. R. Pratt, of Dalton, \$13,917; Hyde, Crowe & Walsh, of Pittsfield, \$14,126; S. W. Menagual, of Stockbridge, \$13,822; Lane Const. Co., of Meriden, Conn., \$15,590; New England Contracting Co., of Worcester, \$14,522; P. Perini, of Rutland, \$11,589. The contract was awarded to the lowest bidder, R. W. Emerson, of Pittsfield, for \$10,313. There has been awarded to Lane Const. Co., of Meriden, Conn., the contract for construction of 10,600 feet of state highway in Becket.

**St. Paul, Minn.**—Largest contract for street curbing awarded in St. Paul probably will come before council for approval. Thornton Bros., St. Paul, Minn., will curb about 10 miles of streets in St. Anthony Park North at a cost to the property of \$22,687. Christ Johnson was low bidder on grading of Winona St., from Smith Ave. to Chippewa St. His bid was \$1,061.96.

**Havelock, Neb.**—Contract has been awarded to Abel & Roberts, of Lincoln, Neb., for 8,872 sq. yds. vitrified brick paving, asphaltic filler, at \$2.12 per sq. yd. This includes 5-in. concrete base and sand cushion. Concrete curb and gutter at 79 cts. A. W. Barnes is City Engineer.

**Elizabeth, N. J.**—To M. J. Leahy, New York, N. Y., for resurfacing with asphaltic concrete streets in Elizabeth is recommended for award at \$1.07 per sq. yd., or total of about \$100,000.

**Jersey City, N. J.**—To C. J. O'Neill, city, at \$0.925 per sq. yd., for improving Winfield Ave., including new curb, brick paving, etc.

**Keyport, N. J.**—Council has awarded contract for laying of concrete walks in borough to Walling & Poling, whose bid was 16 cts. per sq. ft., E. E. Cline, Front St., Keyport, being awarded contract to lay bluestone flag walks at 15 cts. a sq. ft. Bids received ranged from 12½ cts. to 16 cts.

**Paterson, N. J.**—Bids for laying of cement sidewalks in and about Sand Hill Park have been opened and contract awarded to George W. Cisco, 136 Kearney St., Paterson, the lowest bidder. Mr. Cisco agrees to do the work for \$1,691.

**Brooklyn, N. Y.**—For wood block and granite paving for New York Navy Yard to Mack Bros., 512 West Broadway, New York, at \$15,000.

**Rochester, N. Y.**—Board of Contract and Supply has awarded contract for cement walks in Calihan St. to Frank Lachusa for \$128.25. Bids were received on Conklin St. and Merchants road sewer and on Atkinson St. cement walks.

**Syracuse, N. Y.**—Hugh Mulherin, a new bidder on paving contracts, has submitted lowest proposal to Board of Contract and Supply for paving Oak St. from Green St. to Burnet Ave. His proposal was for vitrified brick or block and sandstone block. But one proposal was offered for asphalt. This was by Nicholas Marnell, who also bid on vitrified brick and block, sandstone block and macadam. Only other bidder was Samuel Bonn, who put in proposals for sandstone and brick and block.

**Schenectady, N. Y.**—For laying of sidewalks in Pleasant St., Davis Terrace, Bridge St. and Oakwood St., to C. Camillo & Co., and for paving of Irving St. to T. R. Crane.

**Syracuse, N. Y.**—Bids from several sidewalk contractors have been received. Lowest on each contract was as follows: South side of Kyle Ave. from Cortland Ave. to 100 ft. east of Jay St.—Imperial Sidewalk Co., \$305; west side of Highland St. from Douglas to E. Willow St.—P. C. Lamanna, \$283.50; north side of John St. from Gilbert St. to First North St.—Charles Bonn, \$77; west side of Holden St. from Grand Ave. south—C. Bonn, \$104.50; north side of Fabius St. from No. 310 to Niagara St.—Imperial Sidewalk Co., \$80.88; north side of Kirkpatrick St. from Third North St. to city line—Imperial Sidewalk Co., \$875; both sides Amidon St. from Clyde Ave. to Craddock St.—Eagle Paving Co., \$352.

**Cincinnati, O.**—By Board Public Service for paving Bishop St. with brick to C. W. Danenhowser, 414 Elizabeth St., Cincinnati, at \$8.457.

**Jefferson, O.**—To Luminger & Bennett, Cincinnati, at \$41,687, for improving of east and west road in Rome and Hargrave Twps.

**Mt. Gilead, O.**—For paving East Union St. and section of West High St., to Wieland & Miller, at \$10,000.

**Mt. Gilead, O.**—To Wieland & Miller, city, at \$6,937, for paving of W. High St., and at \$3,400 for paving of E. Union St.

**Norwalk, O.**—To Riley Pardo, city, at \$8,740, for improving of Newman road, by County Commissioners.

**Swanton, O.**—For paving with block N. Main St. to Minnick Construction Co., New Castle, Ind., at \$15,657. Other bids are as follows: McKinney Bros., Toledo, O., \$18,617; G. H. Haffner & Son, Celina, \$17,160; R. C. Roach, Waterville, \$16,548, and Lininger & Burnett, Conneaut, at \$16,432.

**Urbana, O.**—Bids for paving of Urbana's alleys have been received by City Auditor H. M. Crow. There were five bids on each of four alleys. Following are alleys and names of the contractors quoting lowest price per sq. yd.: Alley east of Main St., Scioto to East Court, J. O. Shoup, \$1.28; Odd Fellows alley, J. O. Shoup, \$1.28; Alley east of Main St., Court to Church, Hannigan Bros., \$1.13; Alley south of Miami St., E. B. Frawley, \$1.18.

**Waldo, O.**—For paving Marion St. with Metropolitan brick, 9,826 sq. yds. sandstone curb and gutters, to P. Drake & Sons, Marion, at \$24,483. Lambert Bros. & Wirt, of Delaware, O., bid for this work \$24,786.

**Youngstown, O.**—Twenty-one bids have been received by County Commissioners on contract for grading McCartney Rd., in Coitsville Twp., work going to Chas. Harris, the lowest bidder, for \$2,764.80, his price being 24 cts. a cu. yd.

**Bartlesville, Okla.**—To Granite Bituminous Paving Co., St. Louis, Mo., for paving two blocks of Wyandotte Ave. with bitulithic pavement on 4-in. concrete base. W. W. Jones is Comr. Finance and Supplies.

**Beaver, Pa.**—Ordinance has been passed providing for paving of Taylor Ave. with vitrified wire-cut paving bricks.

**Mt. Union, Pa.**—For paving Shirley and Jefferson Sts. with brick, to Gregory Paving Co., Lewistown, at \$13,000.

**Philadelphia, Pa.**—By Dir. Dept. Supplies for furnishing bituminous material for Bureau of Highways to Barrett Mfg. Co., Land Title Bldg., at 7 cts. for cold application and 8 cts. for hot application.

**Plymouth, Pa.**—To Trinidad Asphalt Co., at \$6,061, for improvement of ground of new school building on E. State St.

**Knoxville, Tenn.**—Contracts for working Mascot road have been let at regular meeting of the Knox County Road Commission. Contract for grading was let to Donovan, Doughty & Taylor, road contracts, at 17½ cts. per sq. yd. for earth grading, 31 cts. for loose rock, and 75 cts. for solid rock excavation. Contract for macadamizing and concrete work was let to Freeman & Robbins, contractors, at 70 cts. for macadam and \$5.75 for concrete. Total appropriation for the Mascot road was \$7,000 and all work will approximate this amount.

**Ft. Worth, Tex.**—Contract for repaving of Houston St. from 10th to E. Front has been let to Roach Managan, Ft. Worth. Material used will be wood blocks and cost will be \$2.98 a sq. yd.

**San Antonio, Tex.**—Following contracts for paving have been awarded by City Council: West Commerce St. with concrete, to W. T. Montgomery, at \$10,745; Nueva St., with creosoted pine blocks, to Roach-Manigan Co., at \$15,000; Cincinnati Ave., with brick, to Beebe Constr. Co., Hutchinson, Kan., at \$37,946.

**Temple, Tex.**—To Howard Const. Co., Belton, Tex., at \$140,000, for paving with gravel about 20 miles of city streets, be-

**Arlington, Va.**—For completing road for highway bridge to Arlington to L. M. Johnson, Arlington, at \$8,197.

**Gate City, Va.**—For grading 14 miles of pike roads, to Oliver & Hill, Maryville, Tenn., at about \$50,000.

**New Cumberland, W. Va.**—For constructing 3 miles of brick pavement, to Frederick Robinson, Meadville, Pa.

### SEWERAGE

**Sacramento, Cal.**—Bids have been opened by City Commission for trunk sewer line from new sump pumping station on Riverside road easterly through annexed district. Engineers estimated that work would cost \$62,000. Among bids was one from C. J. Matthews for \$56,851, which is \$5,149 under the engineer's estimate. Main trunk sewer will extend for 2,226 ft. Sewer will be 9 ft. 6 ins. in diameter and 10 ins. thick. It will be constructed of concrete.

**Westville, Conn.**—Resolutions have been introduced in Town Council providing that question of issuing following bonds be submitted to the voters. For sewers, \$80,000; for fire house, \$12,000.

**Miami, Fla.**—Miami will shortly let contract for sewer extension and in all some 18 miles of additional sewer will be put down, almost doubling present system.

**Tampa, Fla.**—Acting on advice of City Attorney C. B. Parkhill, Board of Public Works has thrown out all of bids for completion of sewer project in Hyde Park District, which Contractor L. B. Harrison dropped, and on which Board has asked new bids, holding company which guaranteed Harrison to be asked for in effort to satisfy bonding company.

**Lafayette, Ga.**—Bond election will be held Oct. 28 for voting on sewer bonds in sum of \$17,500. Address City Clerk.

**Peru, Ind.**—Resolution has been adopted for extension of Grant St. sewer. P. L. Bell, Jr., is City Clerk.

**Council Bluffs, Ia.**—Resolutions have been adopted for construction of various sewers.

**Clinton, Ia.**—Bids will be readvertised for construction of sewer on Fourth St., to be received Nov. 10.

**Oskaloosa, Ia.**—Bids for sewer work at Penn College addition will be opened Nov. 2.

**Fort Scott, Kan.**—Ordinance has been passed providing for construction of a sewage disposal plant or septic tank. C. F. Louderback is Mayor.

**Lawrence, Kan.**—Ordinance has been passed establishing sewer Dist. No. 7 and providing for sanitary sewers therein.

**Leavenworth, Kan.**—Ordinance has been placed on its first reading, providing for installation of sanitary sewer north of the Terminal Depot.

**Baltimore, Md.**—Bond election will be held Nov. 3 for voting on sewerage bonds in sum of \$3,000,000. Address City Clerk.

**Baltimore, Md.**—At November election vote will be taken on \$3,000,000 loan for sewerage purposes.

**Waltham, Mass.**—Plans are being considered for sewage connections for Lawrence estate off Plympton St.

**Flint, Mich.**—See "Miscellaneous."

**Duluth, Minn.**—Petition is being considered asking for laying of sewers in New Duluth and Gary.

**Proctor, Minn.**—Bids for construction of complete sewer system for village of Proctor have been opened by Village Council. It is estimated that cost of the work will run close to \$50,000.

**St. Joseph, Mo.**—Construction of sewers in Brown's Branch, Roy's Branch and Grand Ave. is being planned. Sum of \$2,000 has been appropriated for Brown's Branch.

**Montclair, N. J.**—A measure authorizing construction of east side trunk sewer in Upper Montclair has been passed by Montclair Town Council. The trunk sewer, which is to be about two miles long, draining about 400 acres, will cost about \$30,000.

**Paterson, N. J.**—Ordinance has been adopted to provide for construction of sewers in certain streets and avenues and portions thereof in city.

**Paterson, N. J.**—Ordinances have been adopted for construction of sewers in various streets. C. D. Cooke is Pres. Bd. of Public Wks.

**Plainfield, N. J.**—Common Council has passed ordinance providing for issuance of sewer extension bonds to amount of \$15,000.

**Perth Amboy, N. J.**—Ordinance has been adopted for laying of 8-in. pipe sewer in Amboy Ave. from New Brunswick Ave. to Washington St.

**Rahway, N. J.**—Installation of sewage disposal plant is being considered.

**Rahway, N. J.**—That definite steps should be taken toward establishing sewage-disposal plant and observing orders of State Board of Health to cease pollution of Rahway River has been strongly emphasized by the Board of Trade.

**Newburgh, N. Y.**—Construction of sewers in Liberty and Renwick Sts. is being discussed.

**Syracuse, N. Y.**—Ordinance offered by Alderman John Davin, ordering sewer in Dillaye Ave. and fixing cost at \$6,800, has been adopted. Asphalt and Medina sandstone curb were designated as materials for paving E. Adams St. from S. State St. to Almond St. in ordinance offered by Alderman John H. Bedford and adopted.

**Coal Grove, O.**—Village will vote in 1915 on bond issue for sewer system and water works.

**Dayton, O.**—Site has been purchased for garbage reduction plant to cost \$50,000.

**Eugene, Ore.**—Sewer will be constructed between 9th and 10th Aves., from present sewer between Monroe and Adams Sts. west to Van Buren St.

**Beaver Falls, Pa.**—At special meeting of Beaver Falls City Council resolution was passed authorizing City Clerk Rayle to advertise for bids for construction of 24-in. storm sewer in 5th Ave., between 14th and 16th Sts.

**Chester, Pa.**—Ordinance has been presented by Highway Committee for placing of 8-in. sewer in Stewart's Lane, south of Chester Pike. Same was referred back to council and Chief Burgess authorized to advertise for bids.

**Downington, Pa.**—Borough will vote on Nov. 3 on question of issuing sewer improvement bonds in sum of \$75,000.

**Lebanon, Pa.**—Members of City Council have decided that plans for erection of a second disposal plant for care of North Side sewer system to be half as large again as present plant must be drawn up very shortly.

**South Bethlehem, Pa.**—Ordinance providing for extension of sewers on Mechanic St. and Bishopthorpe St. has passed third reading.

**Pawtucket, R. I.**—Sum of \$4,500 has been appropriated for construction of sewer in Owen Ave.

**Columbia, S. C.**—See "Water Supply."

**Sisseton, S. D.**—Election here has been carried in favor of issuing sewer bonds to amount of \$40,000. J. C. Knapp is Mayor.

### CONTRACTS AWARDED.

**Sacramento, Cal.**—By City Commission to J. W. Terrell, Chico, Cal., at \$21,950, for construction of discharge pipe for Sewage Station No. 2.

**San Diego, Cal.**—To A. C. Hose, for construction of sewer in Frary Heights, at \$4,975.

**Tampa, Fla.**—J. C. McNeill, Tampa, at \$101,378, for completion of Hyde Park section of sanitary sewer system.

**Fort Wayne, Ind.**—The Indiana Engineering & Construction Co. has been awarded contract for furnishing and installing set of sewer lift pumps in Lakeside to relieve sewers during periods of high water. The bid is \$6,514, to which must be added \$700, net price of lots on which station is to be located, and \$100 charge city will make for line extensions to connect motors, bringing entire cost to be apportioned among benefited properties up to \$7,314.

**Mishawaka, Ind.**—By Board of Public Works contract for construction of sewer on East Lawrence St., from Oak to River Sts. to G. Frank Stoeckinger.

**Richmond, Ind.**—J. F. Hipskind has been awarded contract for constructing sewer system on 12th St. from South J St. to North J St. His bid was \$9.98 a ft.

**Muscatine, Ia.**—For construction of sewers in S. S. D. No. 27, 28 and 29, Main No. 1, to D. E. Keeler Co., and for S. S. D. No. 30, Main No. 1, to E. T. Allen and George Fuller.

**New Orleans, La.**—To Victor Lambou, for contracts 69-D and 68-D by Sewerage and Water Board; and contract 67-D to John Reiss, at \$50,942.

**Boston, Mass.**—To James J. Conway, Boston, at \$2,099, for sewer in St. Andrew Rd. and Swift St., East Boston.

**Riverton, Minn.**—To Pollock Bros., for installation of sewer system and water works system, at \$17,115.

**St. Louis, Mo.**—The Mill Creek Joint District Sewer, 1st and 2d Sections, in St. Louis, contracts awarded to Norton, Head & Denneen, who have sublet work in 4 sections to following contractors: American Contr. Co., Jas. T. McMahon Co., Brockelhurst & Potter, Walton, Rawn & Co.

**Billings, Mont.**—To Frank Savaresy, 124 S. 28th St., city, at \$8,150, and Thos. J. Odegard, Kalispell, Mont., at \$1,750, for sewer construction work.

**Columbus, Neb.**—To Offerman Construction Co., South Omaha, for constructing sewer system at about \$21,500.

**Newark, N. J.**—Contract for construction of sewer in Branford Place, from Washington St. to intersection of Springfield Ave. and High St., has been awarded to Cardell & Romaine, on bid of \$1,745.75.

**Plainfield, N. J.**—For construction of trunk sewer: Contract A to Cauldwell-Wingate Co., 381 4th Ave., New York City, and Atlantic Construction & Supply Co., New York City, at \$100,909. Following is itemized bid: 150 lin. ft. 42-in. reinforced concrete sewer, without exeat., \$2.30; 4,000 lin. ft. 42-in. reinforced concrete sewer, 0-6' cut, \$2.54; 8,500 lin. ft. 6'-8' cut, \$2.93; 1,400 lin. ft. 8'-10' cut, \$3.50; 1,400 lin. ft. 10'-12' cut, \$3.80; 600



lin. ft. 12'-14' cut, \$4.21; 100 lin. ft. 14'-16' cut, \$4.85; 5,000 lin. ft. laying 20-in. cast-iron siphon, 0-6' cut, \$1.20; 1,500 lin. ft. 6'-8' cut, \$1.35; 800 lin. ft. 8'-10' cut, \$1.53; 100 lin. ft. 10'-12' cut, \$2; 100 lin. ft. 12'-14' cut, \$2.50; 50 lin. ft. 14'-16' cut, \$3.45; 4,000 lin. ft. laying 8-in. cast-iron force main, 0-6' cut, 40 cts.; 300 lin. ft. 6'-8' cut, 46 cts.; 200 lin. ft. 8'-10' cut, 55 cts.; 100 lin. ft. 10'-12' cut, 73 cts.; 50 lin. ft. 12'-14' cut, 93 cts.; 50 lin. ft. 14'-16' cut, \$1.08; 680 tons cast-iron pipe, \$21.42; 5 tons cast-iron specials, \$61; 30 standard manholes, all depths, \$30; 2 special c'n'g m.h.'s, Plainfield and main trunk siphons, Type A, \$707; 2 special c'n'g m.h.'s, Rock Ave. & Green Brook, Type B, \$809; 2 special c'n'g m.h.'s, Darling, F'r'm & Green Brook, Type C, \$957; 1 siphon chambers, Rock Ave. at Plainfield outfall sewer, \$646; 1 siphon chamber, Rock Ave., at Green Brook road, \$681; 1 siphon chamber, Cramer, from main trunk siphon, \$675; 1 siphon chamber, Darling from main trunk siphon, \$588; 4 siphon chambers, effluent outfall, \$512; 1 str'm crossing, Rock Ave. and Green Brook, \$470; 1 str'm crossing, Dunellen force main and Green Brook, \$500; 1 str'm crossing, main trunk siphon and Green Brook, \$700; 1 str'm crossing, effluent outfall and Green Brook, upper, \$700; 1 str'm crossing effluent outfall and Green Brook, lower, \$700; 1 meas'r'g chamb. & apprt'n's, Rock Ave. & Green Brook road, \$1,750; 1 Venturi meter and register, Plainfield, \$1,224; 1 Venturi meter & register, North Plainfield, \$950; 1 Venturi meter & register, Dunellen, \$856; 100 cu. yds. rock excavation, \$4; 30 cu. yds. extra earth excavation, 75 cts.; 200 cu. yds. additional concrete, \$10; 5,000 lbs. additional steel reinforcement,  $\frac{3}{4}$  cts.; 4,500 cu. yds. earth embankment & filling, 55 cts.; 50 cu. yds. broken stone and gravel filling, \$3; 10 M. ft. B. M. lumber for foundations, \$40; 10 M. ft. B. M. sheathing left in place, \$30; 20 cu. yds. stone paving, \$5; 4 air valves, \$15; 7,000 lin. ft.  $\frac{3}{4}$ -in. galv. wire rope in siphons, 4 cts.; 2,000 lin. ft. piling, 40 cts. Other bidders were: John C. Scradie, Inc., Brooklyn, N. Y., \$103,910; Fusco Const. Co., Newark, N. J., \$109,779.20; Schneider Stelle Co., New Brunswick, N. J., \$110,296.50; G. P. Olcott & Son, Orange, N. J., \$110,462; Kelley-McFeeley Co., Camden, N. J., \$114,151.74; H. C. Brooks Co., Inc., Martinsburg, W. Va., \$117,550.90; T. Foster Callahan, Elizabeth, N. J., \$119,755; Merrill-Ruckgaber Co., New York City, \$122,585.50; Ryan & Reilly Co., Baltimore, Md., \$122,950.40; Wm McCarthy, Baltimore, Md., \$127,169.50; H. K. Corbin Co., Inc., New York City, \$128,650; John W. Haller, Newark, N. J., \$133,075.50; J. L. Sigretto & Co., Woodhaven, L. I., \$136,901; Whiting-Turner Const. Co., Baltimore, Md., \$146,751.50; N. Y. & N. J. Const. Co., Newark, N. J., \$150,723; Chas. Ippolito, Orange, N. J., \$171,573.50; Edward L. Bader, Atlantic City, N. J., \$184,406.50; Michael Garafano & Di Napoli & Toriello Const. Co., Summit, N. J., \$194,574.50; Stobaugh Contr. Co., New York City, \$198,633; J. B. Pennell & Co., Yonkers, N. Y., \$217,241.50.

For construction of sewage disposal works (Contract B) to Edward L. Bader, Atlantic City, N. J., at \$133,102. Following is itemized bid: Engineers' office (lump sum), \$300; 20,000 cu. yds. earth excavation, 75 cts.; 8,000 cu. yds. rolled embankment, 40 cts.; 2 acres seeding, \$100; 2,000 sq. yds. sodding, 10 cts.; 2,000 sq. yds. macadam roads and walks, \$1.50; preliminary settling tanks (lump sum), \$34,000; dosing tank and apparatus (lump sum), \$3,700; sprinkling filter (lump sum), \$49,000; sludge, drying bed (lump sum), \$4,500; final settling tank (lump sum), \$16,000; laboratory building (lump sum), \$1,500; 50 cu. yds. additional concrete, \$10; 5,000 lbs. additional steel reinforcement, 5 cts.; 20 lin. ft. additional concrete channels, 36", \$5; 20 lin. ft. additional concrete pipe, 36", \$6; 20 lin. ft. additional concrete pipe, 30", \$5; 20 lin. ft. additional c. i. line, 30", \$4; 50 lin. ft. c. i. line, 8", 80 cts.; 20 lin. ft. additional c. i. line, 6", 60 cts.; 20 lin. ft. additional vitrified pipe line, 8", 50 cts.; 2,500 lin. ft. cast-iron pipe line, 4", 40 cts.; 400 lin. ft. galvanized pipe line, 2", 20 cts.; 400 lin. ft. galvanized pipe line,  $\frac{1}{2}$ ", 15 cts.; 3 fire hydrants and gates, \$50. Other bidders as follows: Fusco Const. Co., Newark, N. J., \$143,634; H. O. Gardner & Andrew T. Van Cleave, Asbury Park, N. J., \$149,032.24; Suburban Engineering Co., New York City, \$149,849; Pitt Const. Co., Inc., Pittsburgh, Pa., \$154,077; Joseph L. Sigretto, Woodhaven, L. I., \$156,434; Cundwell-Wingate Co. & Atlantic Const. & Supply Co., New York City, \$156,467; Arthur E. Smith, Plainfield, N. J., \$159,285.90; J. W. Heller, Newark, N. J.,

\$161,342; Geo. P. Olcott & Son, Orange, N. J., \$170,002.50; Mason Hilton & Co., New York City, \$171,500; Erie Eng. & Const. Co., L. I. City, L. I., \$180,523.50; Kelley, McFeeley Co., Camden, N. J., \$181,406.30; N. Y. & N. J. Const. Co., Newark, N. J., \$187,783.20; L. B. Cleveland, Watertown, N. Y., \$196,341; Schneider, Stelle Co., New Brunswick, N. J., \$205,020; Chas. Ippolito, Orange, N. J., \$216,995; and Pratt, Reed, Phillips & Co., Schenectady, N. Y., \$231,474.60. Geo. B. Fuller, 170 Broadway, New York City is Engr.

**South Amboy, N. J.**—Bids for construction of extension of sanitary sewer in Main St. have been opened, and were as follows: Thos. Downs, \$2,405.65; Geo. Gundrum, 52 Henry St., South Amboy, \$2,635.10; P. J. Monaghan, \$3,094.67; Snyder, Stelle & Co., New Brunswick, \$3,768.95; Liddle & Pfeiffer, Perth Amboy, \$2,797.90; John Quinland, \$2,785.09. Resolution was adopted awarding work to Thos. Downs as lowest bidder.

**Fairport, N. Y.**—For constructing sewers to Jas. E. Leary Const. Co., Inc., Rochester, \$18,228. Other bids as follows: A. J. Shaw, Jr., Batavia, \$19,236; Bishop Constr. Co., Rochester, \$20,593; Goggin & Schultz, Fredonia, \$21,827; Saml. Bonn, Syracuse, \$25,347. Following are itemized prices of Jas. E. Leary Const. Co., Inc.: Sect. 1, storm sewers: Concrete sewers—60 ft., 33 in., 6 ft. cut, \$2.08; 428 ft., 33 in., 6-8 ft. cut, \$2.14; 210 ft., 33 in., 8-10 ft. cut, \$2.28; 305 ft., 30 in., 6 ft. cut, \$2; vitrified pipe sewers—356 ft., 22 in., 6 ft. cut, \$1.70; 326 ft., 22 in., 6 ft. cut, \$1.42; 77 ft., 12 in., 6 ft. cut, 92 cts.; 170 ft., 10 in., 6 ft. cut, 70 cts.; 26.5 ft. standard brick manholes, \$6; 26.5 ft. standard concrete manholes, \$7; 13 catch basins, \$40; 15 cu. yds. concrete, Class A, \$7; 50 cu. yds. concrete, Class B, \$6; 700 lbs. reinforcing steel, 3 cts.; 5 branches and slants, \$4.25; 10 cu. yds. rock excav., \$3. Sect. 2, sanitary sewers: Vitr. pipe sewers—80 ft. 10 in., 10-12 ft. cut, \$1.08; 291 ft. 10 in., 12-14 ft. cut, \$1.18; 215 ft. 10 in., 14-16 ft. cut, \$1.38; 215 ft. 10 in., 16-18 ft. cut, \$1.50; 225 ft. 10 in., 18-20 ft. cut, \$1.62; 295 ft. 10 in., 20-22 ft. cut, \$1.85; 540 ft. 8 in., 6 ft. cut, 58 cts.; 4453 ft. 8 in., 6-8 ft. cut, 66 cts.; 1,204 ft. 8 in., 8-10 ft. cut, 70 cts.; 470 ft. 8 in., 10-12 ft. cut, 86 cts.; 162 ft. 8 in., 12-14 ft. cut, 94 cts.; 2,550 ft. 6 in., 6 ft. cut, 30 cts.; 50 ft. 6 in., 6-8 ft. cut, 63 cts.; 85 ft. 6 in., 8-10 ft. cut, 68 cts.; 140 ft. standard brick manholes, \$6; 140 ft. standard concrete manholes, \$7; 37 cu. yds. concrete, Class A, \$7; 70 cu. yds. concrete, Class B, \$6; 12 branches on 6-in. sewer, 27 cts.; 186 branches on 8-in. sewer, 40 cts.; 14 branches on 10-in. sewer, 54 cts.; 50 cu. yds. rock excav., \$3; 2 M ft. lumber left in place, \$40; 5 extra manhole heads, ea. \$10. Sect. 3, South side intercepting sewers: Vitr. pipe sewers—42 ft. 10 in., 6 ft. cut, 70 cts.; 57 ft. 10 in., 6-8 ft. cut, 82 cts.; 282 ft. 10 in., 8-10 ft. cut, 85 cts.; 420 ft. 10 in., 10-12 ft. cut, \$1.08; 40 ft. 10 in., 12-14 ft. cut, \$1.18; 580 ft. 8 in., 6 ft. cut, 58 cts.; 179 ft. 8 in., 6-8 ft. cut, 66 cts.; 651 ft. 8 in., 8-10 ft. cut, 70 cts.; 11 ft. 8 in., 10-12 ft. cut, 86 cts.; 24 ft. 8 in., 12-14 ft. cut, 94 cts.; 70 ft. 8 in., 6 ft. cut, 63 cts.; cast-iron pipe sewers—36 ft. 10 in., 6 ft. cut, \$2.50; 43 ft. 10 in., 8-10 ft. cut, \$2.57; 24 ft. 8 in., 6 ft. cut, \$2; 24 ft. 8 in., 6-8 ft. cut, \$2.08; 24 ft. 8 in., 8-10 ft. cut, \$2.17; 65 ft. standard brick manholes, \$6; 65 ft. standard concrete manholes, \$7; 39.4 cu. yds. concrete, Class A, \$7; 20 cu. yds. concrete, Class B, \$6; 11 branches on 8-in. sewer, 40 cts.; 3 branches on 10-in. sewer, 50 cts.; 150 cu. yds. rock excav., \$3; 2 M ft. lumber left in place, \$40; 20 cu. yds. quicksand excav., \$5; 2 extra manhole heads, ea. \$10; 365 ft. 6 in. c-i. pipe in siphons, \$1.80; 1,000 lbs. reinforcing steel, 3 cts.; 1,240 lbs. c-i. specials, 4 cts.

**Schenectady, N. Y.**—Thomas R. Crane, of Schenectady, was low bidder for big contract for sewer extensions in newly annexed section, bids for which were opened by Board of Contract and Supply. Contract calls for sanitary sewers as follows: Elbert St., 620 ft. of 8-in. pipe; Frank St., 610 ft. of 8-in. pipe; Harvard St., 630 ft. of 8-in. pipe; Yale St., 700 ft. of 8-in. pipe; Princeton St., 700 ft. of 8-in. pipe; Alvey St., 600 ft. of 8-in. pipe; School St., 630 ft. of 8-in. pipe; Wagner Ave., 330 ft. of 8-in. pipe; Cornell St., 375 ft. of 8-in. pipe; Brown St., 290 ft. of 8-in. pipe; Vassar St., 350 ft. of 8-in. pipe; Colgate Pl., 520 ft. of 8-in. pipe; State St., 4,520 ft. of 10-in. pipe; Albany St., 2,775 ft. of 12-in. pipe. Bids were: Kalteaux & De Nallo, \$8,284.60; John Allen, \$8,721.50; Charles Ippolito, Orange, N. J., \$13,762.80; A. G. Davis, \$10,482.20; Charles MacAleer, \$10,526.40; T. R. Crane, \$8,054.50; Kehoe & Bissett, \$11,432.40; T. F. McGregor, \$10,774.70.

**Syracuse, N. Y.**—To Merrill-Ruckgaber Co., 50 Church St., New York City, at \$153,105, for completing Onondaga Creek improvement.

**Lisbon, O.**—T. A. Richardson, of Rogers, has been awarded contract by County Commissioners for work of extending South Market St. sewer, a distance of 50 ft., which will carry it to middle of Little Beaver Creek.

**Providence, R. I.**—Contract for new sewage pump to be installed at Ernest St. sewage pumping station has been awarded by Board of Contract and Supply to Providence Engineering Works of this city, which concern offered bid of \$870 for instrument, lowest figure received.

**Woonsocket, R. I.**—For building 8-in. sanitary sewer in the Diamond Hill road to E. B. Roberts Const. Co., of Pittsfield, Mass.

**Oshkosh, Wis.**—To Robert Doyle, for sewers in Lincoln Ave. and Jefferson Ave., at 96 $\frac{1}{2}$  cts. for 12-in. and 89 cts. for 10-in. pipe.

**Cheyenne, Wyo.**—To W. W. Olsep, city, for sewer extension on Morrie St.

## WATER SUPPLY

**Azul, Cal.**—Election will be held shortly to vote on question of issuing following bonds: For water, \$35,000, and for light system construction, \$20,000.

**Bristol, Conn.**—Extension of water mains is ordered.

**Waterbury, Conn.**—Working on plans prepared by city engineer's department, water department is laying 12-in. water main at East Mountain for distance of about a quarter of a mile. New main will connect high service main on Prospect road with 18-in. main from old distributing reservoir.

**Lakeland, Fla.**—Election has resulted in favor of issuing bonds aggregating \$130,000 for water and light plant improvement. O. M. Eaton is Mayor.

**Chicago, Ill.**—More than \$175,000 will be spent by city in laying water mains this winter. Council finance committee has authorized water bureau to carry on this work.

**Chicago, Ill.**—Extension of water mains in new district in North Chicago is being planned.

**Des Moines, Ill.**—Village will vote on Oct. 27 on issuing \$15,000 of bonds for water-works improvements, to include sinking new well, standpipe, tank, pump, motor, etc.

**Sparta, Ill.**—City may install next year waterworks to cost about \$75,000.

**Stronghurst, Ill.**—Election has been carried in favor of issuing water works bonds in sum of \$12,000. Foster Lazear is village clerk.

**Waukegan, Ill.**—W. J. Allen, chief engineer of water works, recommends construction of large basin at head of ravine, used in connection with a syphon for flushing creek.

**Gary, Ind.**—The Fletcher National Bank of Indianapolis was best bidder on \$60,000 Gary Ridge municipal water works bond issue.

**Des Moines, Ia.**—City Council will submit to voters on Nov. 3 proposition to issue water works bonds in sum of \$2,450,000.

**Caney, Kan.**—City is contemplating improvements to its water works system.

**Winchester, Ky.**—Question as to whether citizens will be called on to vote on question of giving City Council right to enter into contract and sell franchise for purpose of securing water for city of Winchester will probably be settled in few days.

**Waltham, Mass.**—Plans are being considered for water supply for Lawrence estate off Plympton St.

**St. Paul, Minn.**—Garrett O. House, superintendent of water department, is planning to increase storage capacity at Lake Vadnais about 175,000,000 gallons, and also to arrange reservoirs so that plant life may be eliminated. It is proposed by Mr. House to build a retaining wall 12 ft. high around west arm, put in hydraulic dredge and dredge out lake bottom and deposit material just outside retaining wall. This would make drive three miles long about west arm, and would give reservoir 12 ft. deep, which would hold 175,000,000 gallons of water, 10 days' supply for city. The copper sulphate treatment would be given the water in main part of lake. Water would be carried through to clear water reservoir created in west arm. Mr. House estimates that whole project would cost \$150,000. Besides dredging project, Mr. House has other improvements contemplated. He proposes to install a 15,000-gallon pump at McCarron's Lake station. This will cost about \$96,000. He

also wants storage reservoir at McCarron's Lake of capacity of about 62,000,000 gallons, to cost about \$261,000.

**St. Joseph, Mo.**—Ordinance has been adopted for laying of water mains on Lovers Lane and for erection of hydrant.

**Chinook, Mont.**—Town Council has decided to build filter bed in Milk River at pumping station. This method is thought practical for handling water question at this point.

**Clyde Park, Mont.**—Clyde Park has voted in favor of issuing bonds in sum of \$18,000 for municipal water works system.

**Collingswood, N. J.**—The second application of borough of Collingswood for approval of its plans for construction of municipal water plant has been heard before State Water Supply Commission at Trenton.

**Albion, N. Y.**—Sealed bids will be received at office of Village Clerk, Edward S. Eaton, until Oct. 26, 1914, at 10 o'clock, for purchase of \$165,000 water bonds of village of Albion, to be used to provide funds for buying of system of water works and constructing extensions and improvements.

**Binghamton, N. Y.**—The expert report on proposed remodeling of city's water system which has been in course of preparation by Nicholas Hill, Jr., of New York, is in hands of Water Commissioners. It is understood that report plans for high pressure system around outskirts of city to improve outside pressure. This will necessitate laying separate set of mains and maintaining high pressure engine at pumping station for this system. Alternative plan is construction of reservoirs in various sections of city to supplement present water pressure. Cost of improvement will be from \$150,000 to \$200,000 and in either case city will have to provide more fire engines, which will respond to all alarms of fire.

**Lindenhurst, L. I., N. Y.**—Committee having charge of initial plans for installation of water system in this village has made recommendations for extension of amount originally estimated to cover addition of a modern filtration appliance which will increase total cost to about \$70,000.

**Saratoga Springs, N. Y.**—Village will vote on Nov. 17 on question of issuing filtration plant bonds in sum of \$100,000.

**Youngstown, O.**—J. H. Howland, expert engineer for Commission on Fire Prevention, says in letter to City Council that it is advisable to construct north side reservoir at once.

**Prineville, Ore.**—A crew of men under State Engineer John H. Lewis have completed prospect work on United States Reclamation Service site for storage dam at Stewart's Grade, on Crooked River, about 30 miles south of Prineville. Project is being considered for purpose of storing water for irrigation of dry farming section north of Prineville, extending to Madras and beyond, of which there are many thousands of acres. Plan is for dam 180 ft. in height, which would back water up for distance of over 15 miles.

**Erie, Pa.**—Another reservoir to hold about 20,000,000 gallons is recommended to solve the water supply problem of city. Estimated cost between \$150,000 and \$200,000.

**Warwick, R. I.**—The campaign for municipal water plant in town of Warwick has been started.

**Columbia, S. C.**—A question of employment of special counsel to prepare petitions asking for second election on bond issue of \$500,000 for water works and sewerage extensions will be considered at regular session of city council.

**Sioux Falls, S. D.**—General discussion has been given proposed bond issue of \$135,000, to be decided at special election Oct. 20. Election is called on recommendation of Consulting Engineer Wolff, of St. Paul, for improvement of city water works system. Commissioner Mundt, head of water and sewer department, in explaining need of improvements, summarized proposed requirements as follows: Reservoir of 1,500,000 gallons capacity, \$16,000; new pump of 5,000,000 gallons capacity, \$35,000; stand-pipe in south end of 300,000 gallons capacity, \$16,000; water main extensions, \$55,000; miscellaneous items, \$3,000; to provide for future needs, \$10,000. Total, \$135,000.

**Seattle, Wash.**—Plans have been received from engineer for laying of water mains on W. 57th St. at cost of \$1,300.

**Hayward, Wis.**—At meeting of Town Board members decided to bond town for sum of \$12,000, estimating that this

amount will be sufficient for erection of pumping and water station. Bond issue will be decided at special meeting to be held Nov. 7.

#### CONTRACTS AWARDED.

**Louisville, Ga.**—To Mischler & Flynn, Chattanooga, Tenn., for water works extension and installation of sewerage system, at \$12,535.

**Casey, Ill.**—For constructing pumping plant and pipe line, to Hall Construction Co. at \$60,000.

**Grand Ridge, Ill.**—By village trustees, to H. C. Woolcox, Oglesby, to furnish and lay 14,000 ft. 8, 6 and 4-in. cast iron pipe, at \$10,000.

**Charles City, Ia.**—Contract for new pumping station has been given to J. O. Hughes. It will be of cement, one story, with an additional room at front for water superintendent's office and location will be next to fire station.

**Augusta, Me.**—To James H. Ferguson, Dorchester, Mass., for slow sand filter plant for city, at \$47,000.

**Chisholm, Minn.**—To Geist Anderson, Chisholm, contract, at \$3,784, for one-story brick building, 91 by 26 ft., as superstructure for water filter.

**Riverton, Minn.**—To Pollock Bros., for installation of water works and sewer system, at \$17,115.

**McComb City, Miss.**—To Slater & Wenderling, McComb City, for constructing concrete reservoir.

**McComb, Miss.**—For constructing concrete reservoir, to Slader & Winnerland, McComb, Miss.

**Baker, Mont.**—To Security Bridge Co., Billings, Mont., for water works system, at \$23,468. Other bids were: C. A. Engall, Lemmon, at \$27,360; Montana Bridge & Structural Co., Billings, at \$24,995; Yellowstone Bridge Co., Forsyth.

**Riverhead, L. I., N. Y.**—For installation of municipal water plant, to Wm. G. Fritz Co., of Newark, at \$79,000.

**Tryon, N. C.**—Contract for putting in new city water works has been awarded to A. H. Guion, of Gastonia, work to be completed in 90 days. Distance from watershed to town is about 3 miles; there will be 13,000 ft. of 4-in. pipe and 4,250 ft. of 6-in. pipe. A 4-in. pipe will be laid from intake to reservoir, and from there to town. Main will be 6 ins. On Piney Mountain, above Hatch House, will be built underground cement reservoir of 100,000 gallons capacity. City's watershed comprises about 345 acres of land. G. H. Holmes is engineer in charge.

**Sandusky, O.**—Contract has been awarded to Shirley-Skelton Co., Toledo, at \$40,814, on bids opened Sept. 22 for constructing 42-in. intake from pumping station to point in Sandusky Bay 1,200 ft. off shore; concrete intake and crib; concrete well in pumping station; 400 ft. 30-in. pipe from Sewage Treatment Plant to Sandusky Bay, all dredging, rock excav., valves, pipe and submarine universal joints, etc. Contract has not been finally closed owing to bonds for this work not been sold. Totals of other bids received as follows: American Constr. Co., Cleveland, \$60,495; J. B. Wonless & G. R. King, Duluth, Minn., \$54,675; A. O. Thacher Constr. Co., Toledo, O., \$47,519; Great Lakes Dredge & Dock Co., Chicago, Ill., \$52,863; Massillon Iron & Steel Co., Massillon, O., bid for part of the work. Itemized prices of Shirley-Skelton Co., Toledo. Intake pipe and crib from plant to Bay: 1 pump well complete (lump sum), \$1,100; 400 cu. yds. trench rock excav., \$4; 1,600 cu. yds. trench earth excav., \$2; 1 valve pit 15 ft. deep (lump sum), \$110; 1 42-in. hydraulic gate valve, \$603; 722 lin. ft. lay and backfill 42-in. c. i. pipe (lump sum), \$2,354; 4,500 lbs. lead, 5 cts.; 200 lbs. oakum (lump sum), \$12; 225 tons 42-in. Class A c. i. pipe, \$21.85. Intake pipe and crib work in Sand Bay: 4,500 cu. yds. dredging earth, 30 cts.; 200 cu. yds. rock excav., \$5; 300 tons 42-in. Class A c. i. pipe, \$21.85; 7,500 lbs. lead (lump sum), \$375; 300 lbs. oakum (lump sum), \$18; 50 tons 30-in. Class A c. i. pipe (lump sum), \$1,142.50; 24 submarine joints in place each 42 in., \$26.41; laying under water 1,200 lin. ft. 42-in. pipe, including unloading pipe from cars, making joints and lowering in place, \$5,400; 1,400 lin. ft. duplex No. 12 electric cable incased in lead and iron pipe laid (lump sum), \$980; 80 lin. ft. 12-in. c. i. pipe laid in crib (lump sum), \$640; 150 cu. yds. concrete, including forms and cofferdam, \$17.50; 20 12-in. valves in place complete (lump sum), \$979; 2 42-in. hydraulic gate valves complete in place, including hand pumps to operate (lump sum), \$1,170; 21,000 lbs. reinforcing steel placed (lump sum), \$1,050; house complete over crib, including stairs, lights,

walk and rail around outside (lump sum), \$1,000; 7 30-in. submarine joints, each, \$25; laying under water, 400 lin. ft. 30-in. pipe, including unloading pipe from cars, making and lowering pipe (lump sum), \$1,600.

**Beaver, Pa.**—Contract for making repairs to dam above 10th St. bridge over Beaver river has been awarded to Dennis Mutschellor by the Beaver Falls Power Co. It is planned to concrete face of the dam for a distance of 200 ft. and when this is done to repair the damaged portions back of it.

**Johnstown, Pa.**—Contracts for improvements in and around water works have been awarded by Board of Commissioners. C. M. Shumacher & Son, 113 W. 26th St., and H. N. Abbott, submitted bids for paving driveway approach to coagulant house at \$1.10 a sq. yd. Former cut his bid 2c. and won the contract. Contract was awarded to Hayes Wall Paper & Decorating Co. to pave exterior boiler house, machine shops and pumping room and interior of latter also with floor tile, for \$532.68.

**Galveston, Tex.**—To R. D. Wood & Co., Philadelphia, Pa., for furnishing 150 tons 8-in. cast-iron water pipe.

**Salt Lake City, Utah.**—To R. E. Wilson, 31 Harmony Pl., Salt Lake City, contract, at \$35,441, for reservoir at Fifth South St., for city, with reinforced concrete bottom and slopes. Work includes two 36-in. bevel-gear valves, one 12-in. valve, weir and meter house, valve house, screens and lifting device.

**Casper, Wyo.**—To Gordon-Taylor Const. Co., Denver, Colo., for construction of water works, at \$69,360.

#### LIGHTING AND POWER

**Azusa, Cal.**—See "Water Supply."

**Pomona, Cal.**—Petitions are being circulated for ornamental street lighting system.

**Peru, Ind.**—Appropriation of \$15,000 has been made for electric light department.

**Richmond, Ind.**—A petition is now in for ornamental post lighting systems on Main St. from 3d St. to 12th St. and on the principal sections of Fort Wayne Ave. and North E St. Plans and specifications for ornamental lighting system recently petitioned for are being carefully prepared by city engineer.

**Cedar Falls, Ia.**—Petition is being circulated for electric lights in northwest part of city.

**DeWitt, Ia.**—Movement has been inaugurated to install boulevard electric lights at estimated cost of \$1,200.

**Leavenworth, Kan.**—Petitions providing for installation of "white way" on 4th St. from Cherokee to Shawnee St. and on 5th St. from Choctaw to Shawnee St. have been accepted by city commissioners.

**Monroe, La.**—Electric plant is being planned for West Monroe.

**Lynn, Mass.**—Municipal Council and the Lynn Gas & El. Co. are considering plans for changing the 1,516 incandescent street lamps for a new type of lamp. Proposed change can be made without additional cost to city.

**Seekonk, Mass.**—Arrangements have been completed with Seekonk El. Co. for installation of a street-lighting system.

**Taunton, Mass.**—Chamber of Commerce is urging establishment of ornamental street-lighting system in Taunton.

**Waltham, Mass.**—Prof. Wickenden advises change in street lamps.

**Bay City, Mich.**—A recommendation for purchase of a 1,200-kilowatt machine will be presented to Common Council by electric light committee. Bids on machine have been received and opened and report on them will be ready for next regular session of Council. Bids for a 1,200-kilowatt and a 1,500-kilowatt machines were considered. On former the Westinghouse Mfg. Co. made a bid of \$22,550 and the Allis-Chalmers Co.'s bid was \$25,300. The Westinghouse bid on 1,500 machine was \$28,350 and Allis-Chalmers bid was \$27,650. Committee favors the purchase of the smaller machine. Bids are on direct connected turbine generators, with condensers and exciters, installed and ready for operation.

**Fenton, Mich.**—Installation of boulevard system of lighting is being discussed. The village engineer, Bert Lockwood, will prepare specifications for bids on three styles—one light, three lights and five lights. These will be presented to council on Oct. 26.

**Mt. Morris, Mich.**—Installation of electric street lights is being discussed.



**Saginaw, Mich.**—Plans have been approved for new street-lighting system on South Franklin St. and South Washington Ave. Lamps of 600 watts and up will be tried out.

**West Duluth, Minn.**—Business men and property owners on Central Ave. propose to start movement to install a "white way" on the avenue.

**Las Vegas, N. M.**—Plans are under consideration for installation of ornamental lighting system on grounds of the New Mexico Normal University in Las Vegas and bids will soon be asked.

**Dunkirk, N. Y.**—Bids for new system of street lighting have been opened by Board of Water Commissioners. Seven different companies submitted propositions to board and these were referred to electric light committee and Supt. W. O. Peck for tabulation.

**Mayville, N. Y.**—A special election of taxpayers has been held to determine proposition of bond issue of \$9,700 for purpose of equipping the village power plant to take electric power from the Chautauqua Traction Co. Vote was carried.

**Oneida, N. Y.**—Better lighting system is being planned. Ornamental lighting system will probably be adopted.

**Weedsport, N. Y.**—Taxpayers will vote on Oct. 15 on issuing \$18,000 in bonds for construction of municipal electric light plant.

**Wecusport, N. Y.**—Proposition to bond village for \$18,000 for municipal lighting plant has been carried at special election.

**Girard, O.**—Broadway property owners have submitted petition requesting Council to install ornamental lights in that thoroughfare on same plan that had been discussed for Liberty St., wherein property owners pay goodly share towards installation of system.

**Springfield, O.**—Petition is being circulated by business men asking for single-light standard instead of clusters.

**Bath, Pa.**—Bond election will be held Nov. 3 for voting on bonds in sum of \$5,000 for electric light improvement. Address Borough Clerk.

**Waterboro, S. C.**—Election has resulted in favor of issuing Electric Light System bonds to the amount of \$15,000. D. B. Black is City Clerk.

**Chatham, Ont., Can.**—Chatham ratepayers have decided in favor of hydro power and by large majority carried by-law to raise \$90,000 to install lighting system. It is proposed to proceed at once with erection of transmission lines.

**Niagara Falls, Ont., Can.**—Alderman Ward, of electric light committee, will bring before Park Commission at its next meeting plan to install decorative lighting system in River Road, similar to systems to be installed in business sections. The nitrogen lamp system could be installed at comparatively small cost. The International Railway Co. will likely be asked to pay portion of cost for privilege of using decorative standards to suspend trolley wires. The city would likely have to pay a little more than one-third total cost. Superintendent George Foster of lighting plant has prepared plans for system.

#### CONTRACTS AWARDED.

**Tucson, Ariz.**—By Council, for equipment for ornamental light poles, to the Russell Electric & Machine Co. at \$6,103.86. Equipment to be furnished by Russell Company includes all lights, globes, cables, wires, etc.; in fact, all materials necessary for installation of ornamental lighting system on Congress St. and Stone Ave.

**Susquehanna, Pa.**—At special meeting of Borough Council, contract of Susquehanna County Light and Power Co. for lighting town was accepted, company to furnish extra incandescent lights where necessary to make up difference between these and arc lights.

#### FIRE EQUIPMENT

**Birmingham, Ala.**—The proposition of Highland garage for motor fire department tractors with which to completely motorize fire department has been accepted by city commissioners, and president authorized to enter into agreement and close the trade. City will purchase several of tractors, which are apparatus so arranged as to replace front truck of present horse driven apparatus, thus making of machine complete motor driven vehicle.

**Lakeland, Fla.**—Bonds in sum of \$20,000 have been voted for fire station and department improvements.

**Kokomo, Ind.**—A movement started by Mayor Stidger and several members of

council may result in entire fire department being motorized.

**Wichita, Kan.**—Purchase of triple combination pump, chemical and hose car is under discussion.

**Clinton, Mass.**—Purchase of auto fire apparatus will be rejected.

**St. Paul, Minn.**—Bids received on 5,000 ft. fire hose have been rejected as too high and new bids will be re-advertised for by city purchasing committee.

**Fremont, Neb.**—Council has been asked to make addition to \$4,000 appropriated for purchase of a motor combination chemical and hose wagon.

**Belleville, N. J.**—Town Council has adopted ordinance providing for issuance of fire engine bonds in sum of \$7,000.

**Haddon Heights, N. J.**—Bond election will be held Nov. 3 for voting on \$5,000 bond issue for Fire Department.

**Marlton, N. J.**—Purchase of automobile chemical engine is being considered.

**Morristown, N. J.**—Township committee has granted \$300 to Resolute Hose Company No. 1 to buy auto truck.

**Spring Lake, N. J.**—Bond election will be held Nov. 3 for voting on issue of \$10,000 for fire apparatus. Address Borough Clerk.

**Wallington, N. J.**—Chief Brennan has recommended purchase of automobile apparatus.

**Binghamton, N. Y.**—Board of Contract and Supply has rejected all bids received for erection of First Ward fire station and plans will be revised before new bids are asked.

**Port Jervis, N. Y.**—For installation of fire alarm system, bids have been received from the Gamewell Fire Alarm Tel. Co. and from the Star Electric Co. but contract has not yet been awarded.

**Syracuse, N. Y.**—Site is being considered for new fire house.

**Utica, N. Y.**—Superintendent of Buildings Cornelius Roberts has issued to city of Utica permit to erect new fire station, corner of Sunset Ave. and Sunset Pl. Work will be done at estimated cost of \$32,000.

**Yonkers, N. Y.**—Ordinance is being considered authorizing Commissioner of Public Safety J. J. Fleming to purchase 3,000 ft. of hose. J. J. Mulcahey is chief.

**Dayton, O.**—City Purchasing Agent Fowler Smith has announced specifications for motor equipment for city Fire Department, upon which he is to welcome bids from every automobile manufacturer in country. Fourteen different machines, practically all of which are to be especially constructed for fire-fighting, and which are to be equipped for speed, are to be purchased by city at estimated cost of \$50,000. Competitive bids on motorization are to be received until Oct. 30. List of auto apparatus upon which city purchasing agent is to ask bids, according to specifications, is as follows: One four-passenger auto for the fire chief; three two passenger machines for the fire marshals; two three-fourth-ton auto utility trucks for hydrant and telegraph departments; three 2-3 4-wheel tractors to be attached to steam fire engines; one 2-3 4-wheel tractor to be attached to service ladder truck; one auto combination chemical engine and hose wagon; one auto city service ladder truck; two 75-foot auto aerial hook and ladder truck.

**Jeanette, Pa.**—Purchase of motor apparatus is being considered.

**Knoxville, Tenn.**—Chief Sam B. Boyd recommends motorization of entire department.

**Richmond, Va.**—It is said that \$18,000 will be spent on purchase of motor apparatus.

**Huntington, W. Va.**—Fire equipment bonds in amount of \$30,000 have been authorized.

**Wheeling, W. Va.**—Council has appropriated \$9,000 for purchase of 45-ft. motor aerial truck, and \$1,250 for purchase of automatic repeater for alarm system. Bids will shortly be called for. Edw. T. Rose is chief.

**Wheeling, W. Va.**—Board of Control will receive bids for new aerial truck until Oct. 28.

**Delevan, Wis.**—City Clerk H. J. Doane will purchase two fire extinguishers and three dozen gaskets.

**Rhineland, Wis.**—Fire department will purchase auto fire truck as soon as enough funds are on hand.

**Sheboygan, Wis.**—Chief of Fire Department Edgar Bedford has recom-

mended that city make provision in next tax levy for purchase of one motor-driven combination hose and chemical apparatus to be used in fire department for making quick calls, and also that provision be made for 1,000 ft. of 2½-in. hose, and heating apparatus installed in No. 3. Fire Station.

#### CONTRACTS AWARDED.

**Joplin, Mo.**—A modern police alarm system will be installed in Joplin by Home Telephone Co. within next four months, contract to this effect having been closed with city commission. City will pay company \$1,305.60 a year for installing and keeping system in running order.

**Roselle Park, N. J.**—To Eureka Fire Hose Co., New York City, for 800 ft. of hose.

**Port Arthur, Tex.**—To Star Electric Co., 686 Frelinghuysen Ave., Newark, N. J., installation of alarm system, at \$8,200.

#### BRIDGES

**Salinas, Cal.**—See Streets and Roads.

**Santa Ana, Cal.**—October 20 has been set as date for receiving bids for building bridge across Coyote creek on La Mirada St., near La Habra.

**Olga, Fla.**—New bridge will be erected over Caloosahatchee river in Lee county.

**St. Augustine, Fla.**—See "Streets and Roads."

**Fort Wayne, Ind.**—County Commissioners have announced that bids for new Harrison street bridge will be opened about middle of November, exact date to be set later. Plans for both steel and concrete bridges are being prepared and bids for both will be opened. It is likely that concrete structure will be erected, majority of interested taxpayers favoring that style of bridge. Commissioners have planned to have bridge, if of concrete, extend to within six feet of Nickel Plate right-of-way.

**Taylorsville, Ky.**—Bond election will be held Nov. 3 for voting on issue of \$30,000 bridge bonds. Address Geo. B. Shindler, County Clerk.

**Roundup, Mont.**—Bond election will be held Nov. 3 for voting on bond issue of \$75,000 for bridges. Address County Clerk.

**Grand Island, Neb.**—At regular meeting of county board it was decided to contribute \$1,200 for expense of constructing extension of Howard-Hall county bridge.

**Atlantic City, N. J.**—Owing to weak condition of bridge over Beach Thoroughfare on Meadow Blvd. County Engineer has been authorized to prepare plans and specifications for retaining walls of concrete to be built, making bridge 60 ft. wide.

**Elizabeth, N. J.**—County Collector Leavitt has sold the \$35,000 issue of bridge bonds authorized by Board of Freeholders at August meeting.

**Newark, N. J.**—Board of Works has approved agreement between Central Railroad and city regarding proposed bridge over Elizabeth branch of railroad at junction of Haynes Ave. and Delancy St., both to be opened.

**Plainfield, N. J.**—Union County Board of Freeholders has sold through County Collector N. R. Leavitt \$35,000 issue of Union County bridge rebuilding bonds.

**Glenville, N. Y.**—Town board will submit to voters, at general election, proposition to issue bonds in sum of \$50,000 for rebuilding of Freeman bridges.

**Dayton, O.**—Nat Clunet, local engineer, has been retained by city engineering department to superintend construction of three piers of Main St. concrete bridge, which has been declared unsafe.

**Dayton, O.**—Bids will be received until 10 o'clock a. m., Nov. 5, at office of County Commissioners of Montgomery county, O., for purchase of \$15,000 coupon Emergency Bridge Bonds. W. H. Aszling is Secretary.

**Cumberland, R. I.**—Plans and specifications for new bridge have been received by joint commission appointed by Town Council of Cumberland and City Council of Central Falls to build new bridge to span Blackstone River at Broad St., connecting the city and town.

**Dallas, Tex.**—Preparation of plans on proposed Merlin St. viaduct will be asked by City Engineer J. M. Preston.

**Galveston, Tex.**—Construction of bridge over Clear Creek, between Galveston and Hallis Counties, is being discussed.

**Barren, Wis.**—See "Streets and Roads."

## CONTRACTS AWARDED.

**Santa Ana, Cal.**—For building of concrete bridge across Trabuco creek to Bert Noble.

**San Jose, Cal.**—By County Commissioners, for constructing reinforced concrete arch bridge on Inhrrmary Road over Stevens Creek Road, to M. E. Kilcourse, San Jose, at \$6,730. Next lowest bids are: Otto Schubert, Berkeley, \$6,788; John McReynolds, San Jose, \$7,400; D. McDonald, San Jose, \$7,405.

**Canton, Ill.**—Contract for repairs on Duck creek bridge, in Banner, has been awarded to J. T. McCombs of Galesburg, a representative of Decatur Bridge company, at \$446. Contract for new reinforced concrete bridge across Westerfield branch in same township goes to A. V. Drennin of Galesburg for \$625.

**Ogawka, Ill.**—To Fowler & Wilson, La Harpe, at \$1,725, or construction of Carlson bridge, Stronghurst township.

**Logan, Ia.**—To Faris Const. Co., Des Moines, at \$4,296, for construction of two culverts and 16-ft. span concrete bridge, and to Illinois Steel Bridge Co., Jacksonville, Ill., at \$2,890, for construction of two 60-ft. pony truss on wood piling, erected complete.

**Lawrence, Kan.**—By County Commissioners, two bridge contracts. These bridges are both in Marion Township. One of bridges is 30-ft. span, let to Missouri Valley Const. Co. at bid of \$961. Other bridge is a 26-ft. span and was let to C. H. Young Const. Co., at bid of \$930.

**Bellingham, Mass.**—By Board of Selectmen, for construction of bridge over Charles River at Caryville, to James A. Monroe, North Attleboro, Mass.

**St. Cloud, Minn.**—Contract for construction of concrete reinforced bridge in Sec. 24 of town of Paynesville has been let to Minneapolis Bridge Co., Minneapolis, Minn., at \$2,250.

**Napoleon, N. D.**—To Iowa Bridge Co., Des Moines, Ia., at \$3,784, for construction of one 30-ft. span I-beam bridge and one 50-ft. span low truss bridge.

**Cincinnati, O.**—To Charles Staab, at \$37,160, for construction of bridge over Mill Creek on Wayne Ave. near Fair Grounds.

**Dayton, O.**—Contract for construction of superstructure of iron bridge over canal at West Carrollton has been awarded by County Commissioners to Brookville Bridge Co. at its bid of \$2,640.

**Lisbon, O.**—Contract for concrete abutments for bridge 618, in Salem Township, has been given to Contractor Frank Cox, of Kensington.

**Tiffin, O.**—By County Commissioners, contract for Lumberjack Bridge No. 193, in Loudon Township, to W. H. & H. A. Souder, at \$228. W. H. Hopple was awarded contract for new reinforced concrete bridge, known as Ewald Bridge No. 213, in Liberty Township, at \$227. L. B. Aldrich was awarded job of repairing Old Fort Bridge No. 44, Pleasant Township, at \$695.

**Youngstown, O.**—By commissioners contract for rebuilding two abutments on bridge over Mill creek in Goshen township, to O. J. Freer, at \$400.50.

**Harrisburg, Pa.**—By Commissioners of Dauphin County, for construction of bridge over Swatara Creek, between Royalton and Middletown, to Ferro-Concrete Co., Harrisburg, at \$17,045.

**Beeville, Tex.**—By County Commissioners, for constructing bridges as follows: Over Aransas Creek, on Beeville-Skidmore Rd., to Austin Bros., Dallas, at \$6,348, and over Aransas Creek, on Skidmore-Corrigan Ranch Rd., to El Paso Bridge Co., El Paso, at \$5,600.

## MISCELLANEOUS

**Birmingham, Ala.**—Public comfort stations in public parks and at several points in downtown business section is strongly recommended by City Plumbing Inspector Charles E. Eckerle in his annual report to City Commission.

**Fresno, Cal.**—Bond election will be held Nov. 3 for voting on \$200,000 bond issue for Hall of Records. Address Clerk Board of Supervisors.

**Pasadena, Cal.**—Commissioner Salisbury has been authorized to buy second-hand truck for use of water department, cost not to exceed \$500.

**Sacramento, Cal.**—City Engineer F. C. Miller has suggested plan to City Commission for restoration of revetment work on levee below the swimming baths. Miller suggests that concrete riprap be used.

**Ordway, Colo.**—Plans are being drawn for modern jail to cost about \$12,000 to \$15,000.

**Washington, D. C.**—A general government contractor in Central American country advises American consular officer that he desires to receive information and catalogues on machines for making concrete blocks and bricks, with view of purchasing such a machine. Correspondence and literature should be in Spanish. No. 14,003, Bureau of Manufacturers.

**Washington, D. C.**—An American consul in Mexico reports the name and address of a German subject who has been granted a 20-year concession for cleaning the streets of a city in the Republic. He desires to purchase six street sprinklers, four street sweepers, and several garbage wagons and carts. He would like to receive catalogues and bids from American firms. No. 14,001, Bureau of Manufacturers.

**Bartow, Fla.**—At regular monthly meeting city council Councilman Tate, Burrows and Clark have been appointed committee to ask for bids for new city hall, to cost \$12,000.

**Bartow, Fla.**—City Council of Bartow is calling for bids for construction of city hall, which is to cost not in excess of \$12,000.

**Bloomington, Ill.**—James C. Melliush and C. G. Broyhill, civil engineers, of this city, have nearly completed plans for reclamation scheme for lands of Spoon River, branch of Illinois, flowing into larger stream down below Springfield. General scheme for reclamation is elaborate one, embracing as it does territory of 1,800 square miles.

**Chicago, Ill.**—Installation of police call boxes at various points about city of North Chicago is being discussed.

**Edwardsville, Ill.**—Purchase of pulmotor has been authorized.

**Fort Wayne, Ind.**—City Engineer will suggest to Board of Works and County Commissioners that before new Fourth St. Bridge over Spy Run Creek finally is located, city make arrangements to straighten creek south of the Lawton Park Bridge.

**Springfield, Mass.**—Bids for building of proposed public sanitary have shown that total cost of plant, exclusive of architect's fees, will be \$20,402. The list of bids was as follows: General contract—A. E. Stephens, \$16,995; E. J. Carlson, \$17,770; Fred T. Ley & Co., \$18,500; Flynt Bldg. & Const. Co., \$18,996; Arthur J. Falvey, \$19,700; D. W. Mellen, \$20,758; Jas. Humphrey, \$23,900. Sanitary as planned is to be underground plant, to be built on southeast corner of municipal group yard.

**Springfield, Mass.**—N. W. Harris & Co., of Boston, have purchased bond issue of \$1,000,000. This issue was made up of following loans: Municipal building loan, 20 years, 4 per cent., \$200,000; High School of Commerce, 20 years, 4½ per cent., \$150,000; Fulton St. loan, 20 years, 4½ per cent., \$400,000; Myrtle St. school addition, 20 years, 4½ per cent., \$136,000; land of school, Franklin and Greenwood Sts., 20 years, 4½ per cent., \$64,000; Brightwood school addition, 20 years, 4½ per cent., \$25,000; Walnut St. engine house addition, 20 years, 4½ per cent., \$25,000; total, \$1,000,000.

**Flint, Mich.**—Proposals to bond for total of \$232,372.04 will be submitted to taxpaying electors of city of Flint at the election to be held on Nov. 3. There are four propositions to be submitted to the voters as follows: For city's share, or 25 per cent. of cost of construction of sanitary sewers and interceptors, \$16,704.03. For total cost of construction of storm water sewers, \$106,836.38. For city's share, or 25 per cent. of cost of construction of pavements, \$58,831.63. For total cost of subway beneath the Pere Marquette tracks, opening Leith St. from Industrial Ave. through to St. John St., \$50,000. Total cost of work outlined in resolutions providing for submission of bonding proposition is \$439,225.81.

**Newaygo, Mich.**—Bond election will be held Nov. 3 for voting on bond issues of \$15,000 for infirmary improvement and \$10,000 for jail improvement. Address County Clerk.

**St. Johns, Mich.**—Bond election will be held Nov. 3 for voting on \$30,000 bond issue for infirmary. Address County Clerk.

**Duluth, Minn.**—Improvements, the aggregate cost of which will amount to \$250,000 will be asked for West End streets during 1915.

**Niles, O.**—Park bonds in sum of \$100,000 will be sold Nov. 16. Homer Thomas is Auditor.

**St. Joseph, Mo.**—Ordinance has been adopted appropriating money for purchase of emergency ambulance for police department.

**Red Lodge, Mont.**—Submission will be made to Carbon county voters at November election of proposal to establish county poor farm at cost of \$25,000.

**Montclair, N. J.**—An ordinance providing for lowering of Toney's Brook, Montclair, from Walnut St. to Bloomfield Ave., has been introduced. Cost, \$90,000.

**Minneapolis, L. L., N. Y.**—Bond election will be held Nov. 3 for voting on bond issue of \$100,000 for hospital. Address County Clerk.

**Oneida, N. Y.**—Special city election to vote on proposed \$20,000 bond issue will shortly be held.

**Schenectady, N. Y.**—The proposed plan for establishment of municipal lodging house in old county jail and county court house building in Lower Union St. has found favor in administration circles.

**Kinston, N. C.**—Bond issue of \$100,000 has been sold by city of Kinston to A. B. Leach & Co., of New York and Chicago, at par and accrued interest.

**Lakewood, O.**—Bond election will be held Nov. 3 for voting on bond issue of \$100,000 for parks. Address City Auditor.

**Portland, Ore.**—Bids for construction of umbrella sheds as shelters for Central Public Market have been received by Commissioner Bigelow, of the Department of Finance, as follows: City Iron Works, \$5,700; Palmer & Ellison, \$6,042; Griffith & Boslin, \$5,890; Le Deaux & Le Deaux, \$5,895; Findley & Jacobson, \$6,300. Mr. Bigelow will investigate various proposals and make report to Council, at which time contract will be awarded.

**Erie, Pa.**—Another step has been taken by city toward construction of municipal boathouse, plans for which have been prepared by Harbormaster Jordan. Structure would cost approximately \$4,500.

**Lebanon, Pa.**—Bids for lowering of Quittapahilla creek, from 9th St. east to vicinity of 6th St., have been opened by Council, and it was found that J. Harry Fry, of this city, was low with bid of \$2.80 against next and only other bid of \$3.20 submitted by Bennett & Randall. Bids were referred to City Engineer T. R. Crowell.

**Philadelphia, Pa.**—But one bid has been received for collection and disposal of garbage for 1915. This proposal was from Penn Reduction Co. for \$323,588, or \$35,000 less than price for this year, which is \$288,588. Bid is being considered.

**Titusville, Pa.**—New jail will be erected this fall.

**Philadelphia, Pa.**—Bond election will be held Nov. 3 for voting on issue of \$11,300,000 improvement bonds. Address City Clerk.

**Wilkes Barre, Pa.**—Looking to prevent flooding of lowlands in this city, Mayor John V. Kosek has presented resolution authorizing city to construct a sea wall along entire easterly length of river front from point near West North St. to Old River road.

**Austin, Tex.**—Bids for construction of 800-ft. reinforced concrete pier—700 ft. representing city's frontage on lake, 100 ft. the university's—will be advertised for. Specifications will be drawn on basis of design submitted by Geo. S. Iredell, with certain modifications, and will call for substantial wall surmounted by railing of three continuous iron pipes, on land side, of which will be concrete walk 8 ft. wide. There will be a floating wharf 50 ft. long, fitted into indentation of pier and reached by adjustable stairs. Plans call for two pavilions, but only foundations will be undertaken at this time.

**Dallas, Tex.**—Tentative plans for proposed public comfort stations at Elm and Ervay Sts. have been filed with Park Board by Architect J. Ed. Overbeck and have been approved by board.

**Dallas, Tex.**—Lake Cliff, comprising about 44 acres of land in North Oak Cliff, has been purchased by City Park Board.

**Seattle, Wash.**—Board of county commissioners has formally passed resolution submitting to voters in November a \$350,000 additional county building bond issue, money to be spent in erecting two stories and a jail, extra floor space to be used by city of Seattle. The addition is to be constructed of terra cotta, three first stories being of granite.

**Tacoma, Wash.**—Pierce County and city of Tacoma have agreed to take immediate step to repair wing dam that protects banks of Puyallup River near McMillin. Expense, estimated at \$3,750, will be divided between the two.

**Tacoma, Wash.**—Five of eight bidders for construction of dredge to be pur-